Volume 5 Number 11
March 1992 £2.95
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# PC TODAY

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**EXCLUSIVE**
Breakthrough for plug-in software

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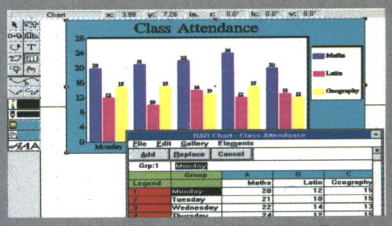
Win Delta's database and graphic packages

## BEST BUY SPOTLIGHT



We put nine desktop lasers to the test

## CUT-PRICE WINDOWS




Three great drawing packages under £150

## ALSO...

- Buyer's Guide to PCs under £1,000
- Power Launcher – Windows utility
- Super VGA video cards compared
- File transfer to Macs made easy

03
9 770952 301012

# Money Manager PC

**The UK's best-selling small business & personal accounts system – Your questions answered**

## What does it do?

Money Manager is an accounting program which is particularly easy to use and quick to set up. With it you can record all your financial transactions, and produce a wide variety of reports which will keep you well informed and totally in control of your financial situation.

## How easy is it to use?

If you can read a bank statement and load a disk into your computer, then you can use Money Manager. You do not need specialised accounting or computing knowledge, just common sense. Feedback over the years from thousands of users of all kinds has been incorporated into the program, the manual and the on-screen help facility, making the program exceptionally user-friendly.

## Who uses it?

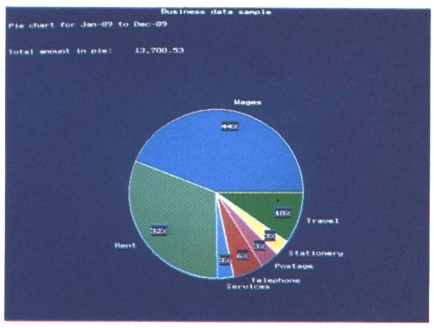
By mid-1991 there were over 50,000 users of Money Manager. Businessmen, doctors, architects, self-employed tradesmen, consultants, solicitors, company department managers, banks, book-keepers, accountants, club treasurers, farmers, schools, expense-account holders etc. Roughly one third of users use it for organising their personal finances.

## At such a low price, can it be any good?

The cheaper the software, the better it has to be in order to succeed. At £250 you can afford a few unhappy customers, but at our price we cannot afford hundreds of them.

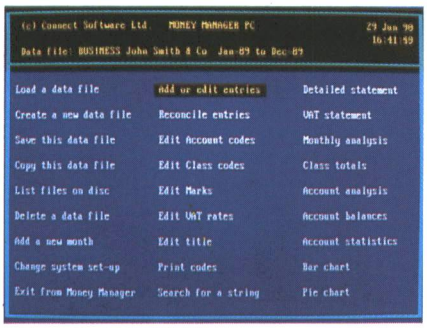
## How does it compare with other software?

With enough time, patience and skill, you might set up a spreadsheet and database to do some of what Money Manager does. We think you probably have better uses for your time, patience and skill! Traditional accounting software has its place, but many users like you find it far more difficult, expensive, time consuming and frustrating than they can afford or are willing to tolerate.




## Will it run on my computer?

Money Manager will run on all IBM-compatible PCs, from a single floppy-disk mono machine upwards. You can install the program on your hard disk, choose your own colour scheme and use a mouse. *Versions of the program are also available for other computers (please call).*




## How do I run it?

Simply type MONEY, and this menu will appear on the screen. "Point" at what you want to do to make it happen. If you do anything wrong, the program will gently tell you so. If you get stuck, press the F1 key for helpful and relevant information to appear in a window on the screen. If you get lost, pressing the Esc key will always bring you safely back to base.

## Can I set up the system to suit my own requirements?

Of course! Everyone tends to see and do things in their own individual way, and we have made it very easy to set up the system to suit your own circumstances and preferences.

## How many different sets of accounts may I have?

Most other accounting systems restrict you to the accounts of just one company. With Money Manager you may have as many different sets of accounts as you need – business, personal, special projects etc.

## How much information can I work on and see at one go?

Each set of accounts contains twelve months' information, with up to 500 entries per month. You can advance the file a month at a time, so that you always have the last twelve months' information at your fingertips to browse through and analyse. All your previous years' accounts will also be readily available on your disk.

## How many bank accounts will it handle?

You may define up to 20, which may be bank accounts, or deposit accounts, petty cash, credit cards, trading accounts or general sales and purchase accounts. A special routine allows for the transfer of money from one account to another.

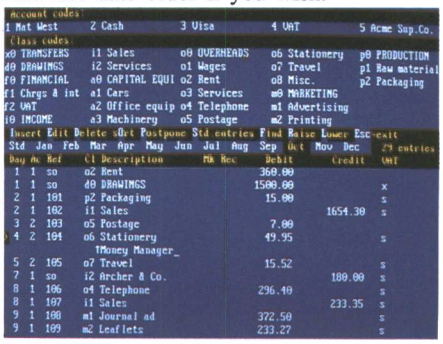
## How many types of income & expenditure can it analyse?

You can define up to 50 "Classes" of income and expenditure, and arrange them in groups. You may for example have a group for Overheads comprising Electricity, Rent, Stationery, Travel, Wages etc., or a group for Motoring comprising Petrol, Maintenance, Insurance, Tax etc.

**Connect**
**Software Ltd.**

## How do I actually enter data?

Select the appropriate menu item, and you can scroll up and down through the entries to remind yourself of what has already been entered (see below). Then simply open up a new line and type in the new entry. The computer will check the data as you put it in, and sort the entries into date order if you wish.

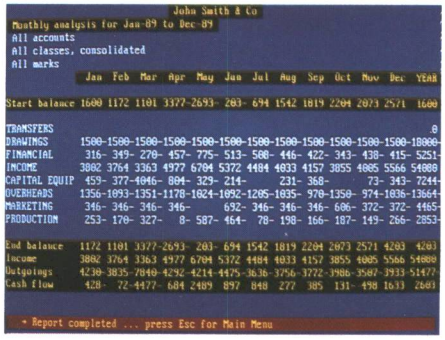



## Can I correct mistakes and omissions?

Unlike most other accounting systems, Money Manager is very forgiving, and understands that people make mistakes or forget things. It allows you to correct errors at any time after the entry has been made. You can also enter data for previous months at any time.

## How do I produce a report?

Select the appropriate item from the menu, and answer a simple series of questions. You can be as selective as you like – anything from "show me a brief summary of all my transactions" to "list in detail all entries concerning purchases of petrol for personal use using a credit card".




## What sorts of reports does it produce?

The information can be displayed in a wide variety of ways to suit your varying requirements. There are detailed statements, showing each entry individually as in a bank statement, with the running balance in the right-hand column. There are various spreadsheet-style reports showing for example a column of totals for each month or for each account, reports showing income, expenditure and cash-flow month by month, etc. And of course there are the graphical bar-charts and pie-charts which can often reveal so much more than the bare figures. The variety of reports is one of the strong features of Money Manager – far more than can be shown here, but if it is useful it is probably included!

**JOHN SMITH Ltd**

**Detailed statement for Jan-90**

**Account 1 (Nat West)**

| Day | Ac | Ref | C1 | Description | Debit | Credit | Balance |
|---|---|---|---|---|---|---|---|
| | | | | Starting balance | | | 2,543.49 |
| 1 | 1 | so | o2 | Rent | 360.00- | | 2,183.49 |
| 1 | 1 | 011 | a2 | Printer | 458.85- | | 1,724.64 |
| 1 | 1 | so | d0 | DRAWINGS | 1,500.00- | | 224.64 |
| 3 | 1 | 012 | o3 | Rates | 130.45- | | 94.19 |
| 6 | 1 | 014 | o5 | Postage | 45.20- | | 48.99 |
| 6 | 1 | 015 | x0 | Trnsfr to Ac 3 | 142.32- | | 93.33- |
| 6 | 1 | 016 | i1 | Sales | | 483.34 | 390.01 |
| 7 | 1 | so | i2 | Archer & Co. | | 150.00 | 540.01 |
| 9 | 1 | 019 | 1 | Sales | | 936.35 | 1,476.36 |
| 9 | 1 | 0110 | i2 | Services | | 150.00 | 1,626.36 |
| 10 | 1 | 0111 | x0 | Transfr to Ac 4 | 743.26- | | 883.10 |
| 12 | 1 | 0113 | i1 | Sales | | 839.37 | 1,722.47 |
| 14 | 1 | 0114 | m1 | Journal ad | 346.00- | | 1,376.47 |
| 15 | 1 | so | o1 | Wages | 500.00- | | 876.47 |
| 18 | 1 | 0115 | o4 | Telephone | 230.29- | | 646.18 |
| 20 | 1 | 0116 | i1 | Sales | | 1,243.19 | 1,888.37 |
| 26 | 1 | 0121 | p2 | Cartons | 34.00- | | 1,854.37 |

## Can I print the reports?

Any report can be printed on your printer as well as on the screen. The program can be set up to work with Epson dot-matrix, Diablo daisywheel or HP laserjet compatible printers. In the unlikely event that your printer is not compatible with one of these, you can easily enter the commands required by your particular printer.

**JOHN SMITH Ltd**

**VAT statement for Oct-89**

| Day | Ac | Ref | C1 | Description | Exmt/0-rtd | Taxable | Rate | VAT | Total |
|---|---|---|---|---|---|---|---|---|---|
| **OUTPUTS:** | | | | | | | | | |
| 2 | 1 | 102 | i1 | Sales | | 1,438.52 | s | 215.78 | 1,654.30 |
| 7 | 1 | so | i2 | Archer & Co. | | 156.52 | s | 23.48 | 180.00 |
| 8 | 1 | 107 | i1 | Sales | | 202.91 | s | 30.44 | 233.35 |
| 16 | 1 | 1014 | i1 | Sales | | 823.91 | s | 123.59 | 947.50 |
| 25 | 1 | 1018 | i1 | Sales | | 730.47 | s | 109.57 | 840.04 |
| | | | | TOTALS | | 3,352.34 | | 502.85 | 3,855.19 |
| **INPUTS:** | | | | | | | | | |
| 1 | 1 | so | 02 | Rent | 360.00- | | - | | 360.00- |
| 2 | 1 | 101 | p2 | Packaging | | 13.04- | s | 1.96- | 15.00- |
| 3 | 2 | 103 | o5 | Postage | 7.00- | | - | | 7.00- |
| 4 | 2 | 104 | o6 | Stationery | | 11.79- | s | 1.77- | 13.56- |
| 5 | 2 | 105 | o7 | Travel | | 13.50- | s | 2.02- | 15.52- |
| 8 | 1 | 106 | o4 | Telephone | | 257.74- | s | 38.66- | 296.40- |
| 9 | 1 | 108 | m1 | Journal ad | | 323.91- | s | 48.59- | 372.50- |
| 9 | 1 | 109 | m2 | Leaflets | | 202.84- | s | 30.43- | 233.27- |
| 13 | 3 | 1011 | o7 | Travel | | 20.19- | s | 3.03- | 23.22- |
| 14 | 3 | 1013 | o6 | Printing | 1.94- | 28.07- | s | 4.21- | 32.28- |
| 17 | 5 | 1015 | p1 | Raw materials | | 149.97- | s | 22.49 | 172.46- |
| 22 | 2 | 1016 | o7 | Travel | | 17.37- | s | 2.61- | 19.98- |
| 22 | 3 | 1017 | o5 | Postage | 48.67- | | - | | 48.67- |
| 29 | 3 | 1019 | o7 | Travel | | 20.36- | s | 3.05- | 23.41- |
| 30 | 2 | 1020 | 06 | Stationery | | 7.26- | s | 1.09- | 8.35- |
| | | | | TOTALS | 417.61- | 1,066.04- | | 159.91 | 1,643.56- |

Summary:

| | | |
|---|---|---|
| VAT due | on outputs | 502.85 |
| VAT deductible | on inputs | 159.91 |
| **Net VAT payable** | | **342.94** |
| Value of outputs | (excl VAT) | 3,352.34 |
| Value of inputs | (excl VAT) | 1,483.65 |

## Will it do my VAT?

A single character entered in the VAT column of each entry is all the system needs to produce a fully detailed VAT report for the month, quarter or year. Doing your VAT return will now only take you a couple of minutes, and you will have at your fingertips all the information you need to keep the VATman happy (!).

## And if I'm not VAT-registered?

No problem – simply ignore anything to do with VAT, and the VAT-related features of the program will not get in your way at all.

## Is the manual in plain English?

Yes! The manual incorporates feedback from conversations with hundreds of users. We are so confident that the program and manual really are easy to understand that our telephone help-line service is free and indefinite.

## What do users say about it?

*I should like to say how pleased and impressed I am with Money Manager. It seems to me far simpler, faster and more flexible than any of the other accounts packages I have looked at. I have so far used it to prepare two sets of accounts for a small business, and am delighted with the results.* **R.D.H. (Yeovil)**

*I would like to congratulate you on an excellent program. I am treasurer of a local cycling club and the help the program gives me in that job is tremendous, and impresses the auditors too! It is also very useful to be able to keep track of my personal accounts, and know to the penny how much I owe to on various credit cards. Keep up the good work!* **J.F.N. (Wilts)**

*I cannot let this opportunity pass without repeating my satisfaction with Money Manager. I am using it for the bookkeeping of several small businesses. Before I retired recently after 40 years in banking, 24 of which were as a branch manager, I would have been delighted if my small (and some not so small) business customers had presented me with figures and statistics of their businesses as produced by Money Manager. It really is a program which, being so easy to use, could save many businesses from the chaos and disaster which can, and so often does, result from poor or non-existent bookkeeping.* **R.A.L. (Cheshire)**

## What else has it got?

- Bank statement reconciliation
- Standard entries (eg standing orders)
- Part-VAT/part exempt entries
- Set up to 8 different VAT rates
- Up to 50 "Marks" for extra identification
- Text-string search facility
- Reports can be exported to a disc file
- Context-sensitive help windows
- Pop-up five-function calculator
- Macro facility to record and play back often-used sequences of key-strokes
- 2 sample sets of accounts included for self-training

## Do I need so many features?

All the facilities in Money Manager are there because large numbers of people have found a need for them. If there is something you don't need at the moment then you can simply ignore it until the need arises.



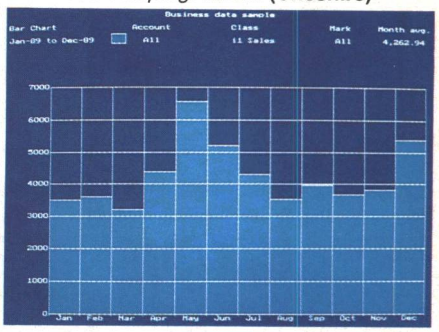

## How much does it cost?

Only **£49.95** incl VAT

**RRP £69.95 – Buy direct and save £20!**

## I have some more questions . . .

Call us on 081 743 9792–there is usually someone intelligent and informed available to talk to you.




*Also from*

# Connect Software Ltd.

## Final Accounts

This program will read in your existing Money Manager data and transform it into a full set of end-of-year and management accounts, as normally prepared by an accountant. Asset depreciation, trial balance, P&L, balance sheet, bank reconciliation statement, VAT reconciliation reports are available in a variety of layouts, and the figures for the previous year may be shown alongside those for the current year for comparison. *£49.95*

## Final Accounts Professional

All the features of Final Accounts, plus accounting ratios, source & application of funds, capital allowances, private use, tax calculations and a built-in word processor for writing notes on the accounts as you go along. *£99.95*

## Disc Manager

Disc Manager helps you organise, maintain and look after the most important part of your computer system: the information on your disc. Two directories displayed simultaneously to ease copying, deleting, renaming and moving of files singly or in groups. Directory trees, text file viewer/editor, "quickview" file content scanner, file & text search, system info, and a unique graphical display of the disc contents for a really clear view of how your disc is being used. *£49.95*

**Connect Software Ltd, 3 Flanchford Rd, London W12 9ND Tel 081 743 9792 Fax 081 743 8073**

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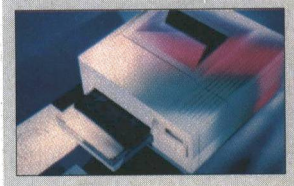
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# COVER FEATURES

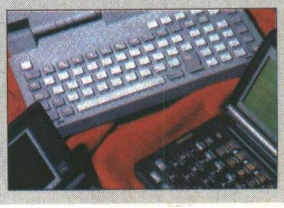


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**Computers you can hold in your hand are more powerful than the original IBM PC! We try the latest models and preview a revolutionary newcomer.**



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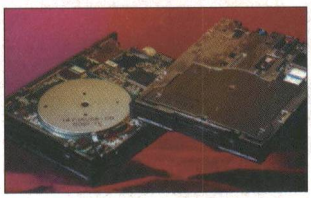
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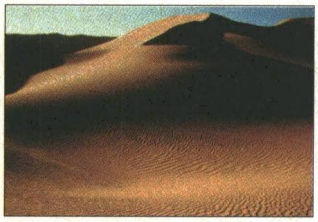

## WIN A 386SX

**Here's your chance to help a charity and win a 386SX PC – with the disk-based Reader Survey. Also a banner maker and Dos utilities. Full instructions start on Page 73.**



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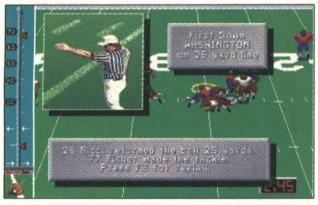
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# £10,000 GIVEAWAY!

**Win one of 10 copies of Compsoft's Delta Five and Delta Five Graph, together worth over £1,000. You'll find your competition entry form on Page 67.**

# SAVE £££s WITH OUR RED-HOT SUBSCRIPTION OFFERS

**Turn to Page 179 to find out how you could save yourself a bundle by taking out a subscription to the most informative PC magazine around!**

# PC TODAY freebies

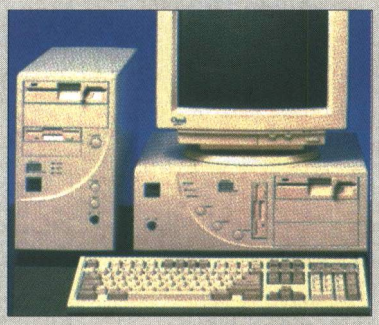
**Fancy a copy of PagePlus, PC-Kwik, Links, Fun School 4, or ActaeOn? They could all be yours for nothing. See Page 59.**

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- **Presentation graphics for Dos**
- **Project management packages evaluated**
- **Multimedia PCs – what's inside them?**
- **CD-rom upgrades – can you DIY?**
- **Tutorials for dBase, SuperCalc, 1-2-3**

# WITH TODAY'S SUPER DISK



**And for every reader taking part in our survey on Page 84 we'll donate up to £2 to charity!**

# MULTIP

## THE WORLDS MOST DESIRABLE COMPA

GENIUS 386SX/486SX

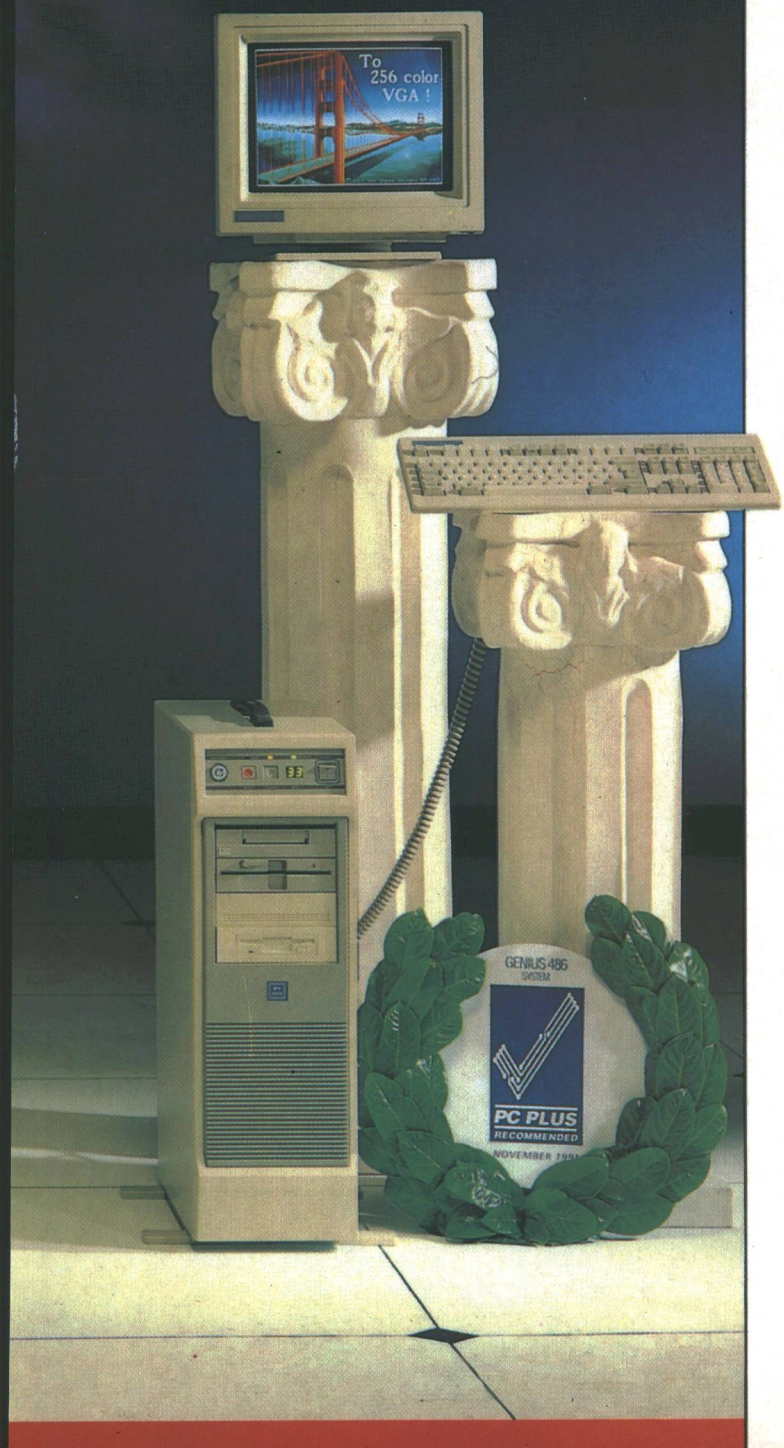
386SX CACHE
386-55/65



# LEX

## TIBLE COMPUTERS

486DX-120/160 CACHE




## ...UNBEATABLE PRICE
## UNBEATABLE PERFORMANCE...

### GENIUS 286 - 16

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| MICROSOFT QUICKBASIC | £59 | PRG0025 |
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| TURBO C++ | £64 | PRG0030 |
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| CAERE OMNITYPE OCR (FOR MICROTEK SCANNERS) | £269 | SOS0018 |
| CALERA WORDSCAN | £299 | SOS0019 |
| CALERA WORDSCAN PLUS | £668 | SOS0020 |
| XEROX GRAY F/X | £295 | SOS0021 |
| XEROX DISCOVER FREEDOM 386 OCR | £569 | SOS0022 |
| IMAGE-IN-COLOUR | £569 | SOS0023 |
| IMAGE-IN-COLOUR FULL PACK | £699 | SOS0024 |
| READRIGHT | £305 | SOS0025 |
| READRIGHT PERSONAL | £159 | SOS0026 |
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| LOTUS 1-2-3 2.3 SERVER | £365 | SSH0011 |
| LOTUS 1-2-3 3.1 PLUS | £296 | SSH0012 |
| LOTUS 1-2-3 3.1 SERVER | £429 | SSH0013 |
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| PC CALC+ | £65 | SSH0016 |
| PLANPERFECT | £252 | SSH0017 |
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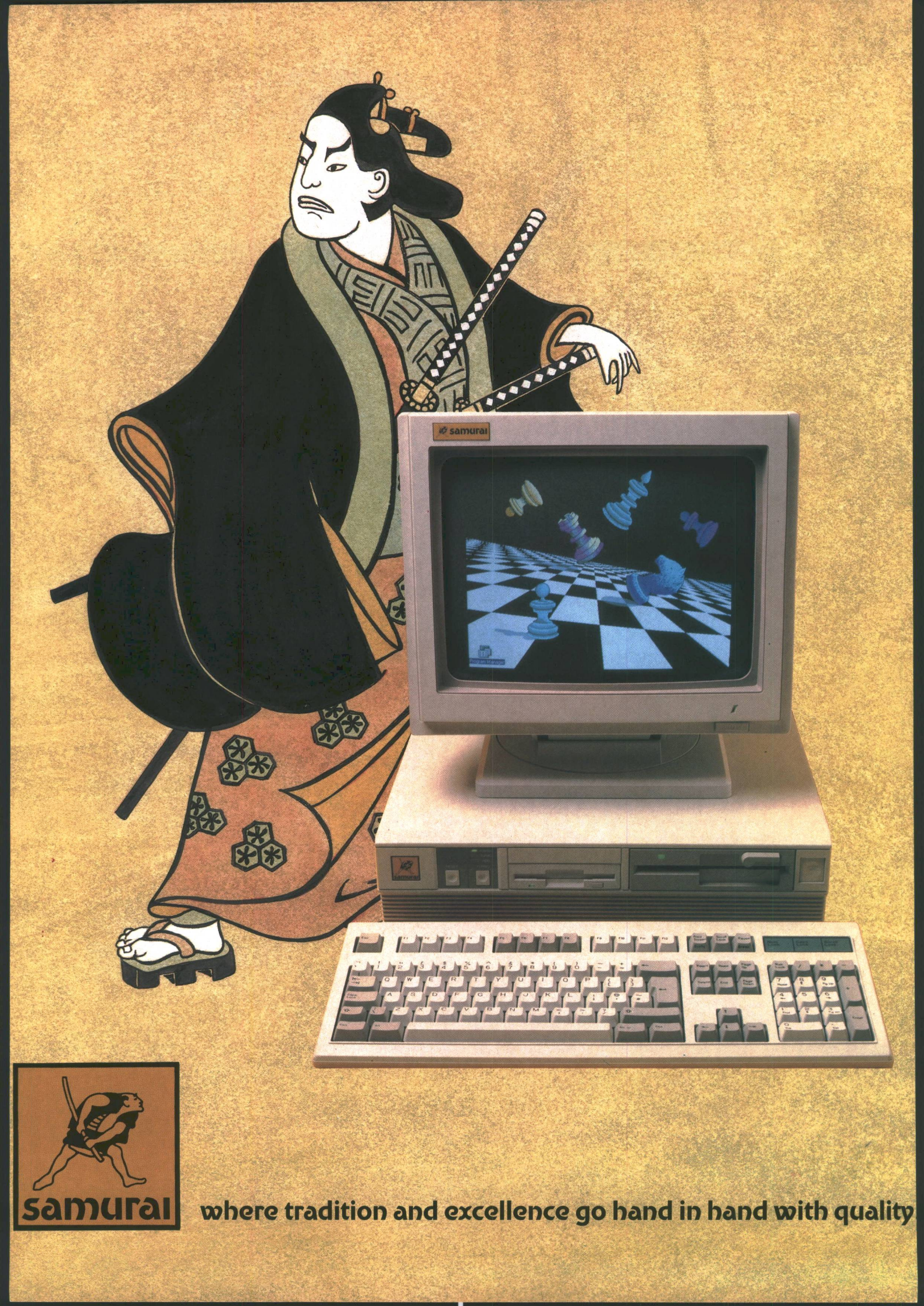
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- Super VGA colour monitor
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|---|---|
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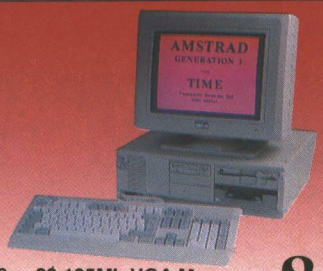
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| 2Mb | £999 | £1049 | £1349 | £1749 |
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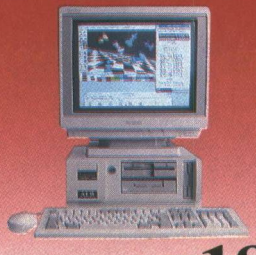
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|---|---|---|---|---|
| RAM | 40 Mb | 100 Mb | 200 Mb | 400 Mb |
| 2Mb | £999 | £1149 | £1349 | £1849 |
| 4Mb | £1099 | £1249 | £1449 | £1949 |
| 8Mb | £1299 | £1449 | £1649 | £2149 |

Panasync 1024 x 768 Super-VGA Colour £150 extra.
286-16 £100 less. 486-33 £600 extra.
Windows 3, DOS 5 & Mouse included.

## Tandon PACII



486-33 VGA Mono £1699
or lease for just £15.07/week*

• Time-Proof Upgradeable CPU • SCSI Removable Data Pacs

| RAM | 386sx-20c | 486sx-20 | 486-33 |
|---|---|---|---|
| 2 Mb | £1099 | £1399 | £1699 |
| 4 Mb | £1199 | £1499 | £1799 |
| 8 Mb | £1399 | £1699 | £1999 |

3.5" or 5.25" floppy drive optional.
40Mb, 100Mb, 200Mb or 400Mb SCSI Data Pacs.
Prices include DOS, Windows 3, mouse & VGA screen.
Panasync screens recommended for only £150 extra.

## Tandon Notebooks



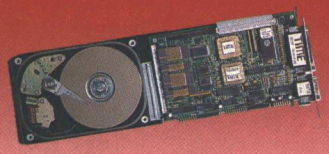

386-sx 20 40Mb 4Mb RAM £1499
or lease for just £13.29/week*

• POWERFUL VGA NOTEBOOK

| Model (Windows 3.0 included) | NB 386sx-20 | |
|---|---|---|
| | 40 Mb | 60 Mb |
| 2 Mb | £Call | £Call |
| 4 Mb | £1499 | £1699 |
| 8Mb | £1799 | £1999 |

Wide range of options available
Panasync screen, External keyboard, Modems etc.
Configured ready to use systems. Call for prices on options.

## Smartcards™



100Mb XL Model £355
or lease for just £3.15/week*

• THE BEST WAY TO ADD A HARD DISC TO YOUR PC

| Model | Size Mb | Slot | Speed Ms | Price £ |
|---|---|---|---|---|
| Smartcard 40 | 40 | 8 bit | 19 | £225 |
| Smartcard 100 | 100 | 16 bit | 19 | £395 |
| Smartcard 200 | 200 | 16 bit | 15 | £695 |
| Smartcard 340 | 340 | 16 bit | 12 | £1195 |

XL models do not include software pack and cost £50 less.

## ST Packs




**When you buy any PC system with an ST Pack you may select one or more leading software packages. Select from:–**

### PC Tools 7.1

New PC Tools from Central Point Software are the best and most comprehensive PC utilities in the world.

### Wordstar 5.5

Wordstar 5.5 (RRP £399) is one of the best wordprocessors on the market. It will satisfy all your WP requirements.

### Framework XE

The leading software package which includes wordprocessing, filing, spreadsheets, graphics and more.

### dBase III Plus SE

Ashton-Tate dBase III Plus SE (RRP £529) is one of the world's best data base filing system.

## Options and Upgrades

| | |
|---|---|
| ST Pack1: PC with one software | £50 |
| ST Pack 2: PC with two software packs | £100 |
| ST Pack 3: PC with 3 software packs | £150 |
| ST Pack 4: PC with 4 software packs | £200 |
| Microsoft compatible serial mouse | £39 |
| First 12 months onsite Warranty | £Call |
| 3 Year Time-Cover Warranty | £Call |
| 5.25" floppy drive for PCPRO | £129 |
| 5.25" floppy drive for Tandon MCS | £79 |
| 3.5" or 5.25" Floppy drive for PAC II | £99 |
| 3.5" or 5.25" Floppy drive for ALR/Sanyo | £79 |
| 120Mb internal tape sreamer | £299 |
| 250Mb internal tape streamer | £399 |
| Tape Streamer card (if both floppies fitted) | £99 |
| 700Mb Tape streamer and Card | £999 |
| Extra RAM memory/Mb | £50 |
| Maths Co-processor (installed) | £Call |
| Panasonic Matrix & Laser printers | £Call |
| ALR & Tandon CPU upgrade service | £Call |

## Time Service

**Service and support are the essential components of any solution. Just compare our service.**

- Marketing services for product information.
- Sales advice on your requirements.
- Pre-sales technical support.
- Order by phone (VISA, ACCESS) or FAX or POST. Cheques & bankers drafts welcome. Official orders accepted (30 day credit terms subject to status). *Leasing terms available for business users only.
- Configuration of your system with installation of options (e.g. extra RAM, floppy drives, tape streamers, network cards etc)
- Full testing of all systems prior to despatch.
- Prompt courier delivery.
- After-sales customer services.
- After-sales technical hotline support.

**Three year peace of mind with the comprehensive Time-Cover warranty option. Available on most models.**

FAX FAX coupon to: Marketing Dept. **0254 664 053**

Post to: Marketing Department Time Computer Systems Ltd, **FREEPOST** Blackburn BB2 1XS

### FOR MORE INFORMATION

Please send me further information on the following. Please tick one or more:—

- ☐ Olivetti PCS286
- ☐ Olivetti PCS386sx
- ☐ Olivetti M290SP
- ☐ Olivetti PCPRO 386sx
- ☐ Olivetti PCPRO 386-33
- ☐ Olivetti PCPRO 486sx
- ☐ Olivetti PCPRO 486-33
- ☐ Olivetti JP350 printer
- ☐ Amstrad 3286
- ☐ Amstrad 3386sx
- ☐ Amstrad ACL Laptops
- ☐ Amstrad Notebooks
- ☐ Amstrad ALT laptops
- ☐ Tandon PAC II
- ☐ Tandon MCS Range
- ☐ Tandon N Range
- ☐ Tandon Notebooks
- ☐ Tandon Servers
- ☐ Smartcards
- ☐ Sanyo Desktops
- ☐ Panasonic matrix printers
- ☐ Panasonic laser printers
- ☐ Bundled Software
- ☐ Sanyo 286 Notebooks
- ☐ Sanyo 386 Notebooks
- ☐ ALR Powerflex
- ☐ ALR Business VEISA
- ☐ ALR Power VEISA
- ☐ ALR Powerpro
- ☐ 3 year Time Cover Warranty

Title: Initials:

Surname:

Job Title:

Company:

Address:

Town:

Postcode:

Daytime Tel:

Fax: PE 3

**SIZE OF COMPANY:**

- ☐ Not a business
- ☐ 1-9 staff
- ☐ 10-99 staff
- ☐ 100-999 staff
- ☐ over 999 staff

TS2B

# ☎0254 682343

TIME Computer Systems Ltd

# memory direct

**For all your Memory Upgrade requirements from the UK's largest dedicated supplier of Memory Upgrades.**

**APPLE, AST, AMIGA, COMPAQ, DELL, DEC, EVEREX, EPSON, ELONEX, GOLDSTAR, HYUNDAI, HP, IBM, INTEL, ICL, MITEC, NEC, NCR**

## 1 COMPAQ

Full range available to suit Portables II, III, 386, SLT and LTE and all DESK Pro Series 286e to 386E/33/486/25/33 and System Pro Memory.

**DESKPRO 386/33**

| | |
|---|---|
| 2MB Module | £128 |
| 6 socket exp/board (W/2MB) | £374 |

**DESKPRO 386/20/25/E/S**

| | |
|---|---|
| 1MB add-on Module | £75 |
| 4MB add-on Module | £239 |
| 1MB Expansion Board | £119 |
| 4MB Expansion Board | £278 |

**DESKPRO 386/16**

| | |
|---|---|
| 1MB Kit | £116 |
| 2MB Kit | 346 |
| 1MB Expansion Board | £228 |
| 4MB Expansion Board | £539 |
| 8MB Expansion Board | £880 |

**COMPAQ 286N & 386N**

| | |
|---|---|
| 1MB Module | £66 |
| 2MB Module | £110 |
| 4MB Module | £210 |
| 0 – 12MB Expansion Board | £79 |

**COMPAQ 386S/20**

| | |
|---|---|
| 1MB Module | £68 |
| 2MB Module | £115 |
| 4MB Module | £212 |

**Portable Memory** See Portable Memory section.

**COMPAQ SYSTEM PRO 486 & D/PRO 486**

| | |
|---|---|
| 2MB Module | £135 |
| 8MB Module | £565 |
| 32MB Module | £3480 |
| 6 socket exp/board (W/2MB) | £374 |

## 2 RESEARCH MACHINES

At last the 100% functionally compatible RM Memory.

| AX 286 | | VX 386/16 | VAX 386/25 | | VAX 486/25 |
|---|---|---|---|---|---|
| £295 | 4MB | £295 | £620 | 8MB | £620 |
| £620 | 8MB | £620 | | | |

All machines upgradable to 16MB.
Generous Education Discounts.

## 3 AST

**PREMIUM 386C, 386/16**

Upgrade £60 4MB Upgrade £196

**MINIMUM II 386 SX/20, SX/16**

Upgrade £59 4MB Upgrade £330

**MINIMUM 386/33T, 486/25, 486/33**

8MB Upgrade £679

**MINIMUM 386/25, 33**

1MB Upgrade £66

**BRAVO 486/25**

2MB Upgrde £151

(Full range of AST approved upgrades in stock. Going FASTRAM and RAMPAGE board upgrades.)

**IF YOU DO NOT SEE THE UPGRADE YOU REQUIRE PLEASE CALL**

**0252 316060**

ALL KINGSTON PRODUCTS ARE 100% COMPATIBLE OR FULL MONEY BACK GUARANTEE

## 4 IBM AT

Expansion cards, LIM 4-0 SIMM upgradeable. Easy install.

| | | | |
|---|---|---|---|
| 2MB | £170 | 12MB | £470 |
| 4MB | £230 | 16MB | £590 |
| 6MB | £290 | 24MB | £820 |
| 8MB | £350 | 32MB | £1060 |

## 5 IBM PS/2

| | | | | |
|---|---|---|---|---|
| PS/1 | 0.5MB | £39 | 2MB | £102 |
| M30/286 | 0.5MB | £28 | 16MB | £91 |

**M50Z/55SX/70**

1MB £50 2MB £84 4MB £161

| | | | | | |
|---|---|---|---|---|---|
| M80 | 1MB | £87 | M90/95 | 2MB | £113 |
| | 2MB | £101 | | 4MB | £102 |
| | 4MB | £211 | | | |

(Range includes Models 35, 40, 56 and 57)

**Adaptor Cards**

| | | |
|---|---|---|
| M50, 50Z, 55SX & 60 | 2 – 14MB | £226 |
| M70 & 80 | 2 – 14MB | £226 |
| | 4 – 16MB | £266 |

(All above have IBM I.D. numbers and have IBM S/W copyright approval)

**Memory Direct**

"For memory, there isn't a manufacturer or distributor who can touch our service."

## 6 WORKSTATION DIVISION

Kingston's memory and storage enhancements are individually tested, fully warranted and 100% compatible. Our memory upgrades support the following:

IBM RISC 6000
HP 9000
SILICON GRAPHICS
IRIS AND INDIGO
DATA GENERAL AVIION
Full DEC and SUN range, including 16MB IPX & ELC
32MB HP 9000/700.



WORKSTATION MEMORY

MOPS

## 7 PORTABLES

**TOSHIBA**

| | | | | |
|---|---|---|---|---|
| T1000SE, XE | 1MB | £110 | 2MB | £160 |
| T1000LE, T2000SX | 1MB | £110 | 2MB | £160 |
| T2200SX, T4400 | 4MB | £398 | 8MB | £796 |
| T1200XE | | | 2MB | £109 |
| T3100SX, 32000SX | 2MB | £109 | 4MB | £225 |
| T3100E | 0.5MB | £95 | 2MB | £109 |
| T1600, T5100 | | | 2MB | £109 |
| T5200, T8500 | 2MB | £109 | 8MB | £525 |
| T3200 | | | 3MB | £187 |
| T3100 | | | 2MB | £298 |
| T3200SXC | 2MB | £132 | 4MB | £320 |

Caution: There are a few very low cost alternative manufacturers producing down-graded modules. Please call us for status and unbiased technical advice.

**COMPAQ**

| | | | | |
|---|---|---|---|---|
| SLT/286 | 1MB | £120 | 4MB | £426 |
| SLT/386 | 1MB £120 | 2MB | £118 | 4MB £448 |
| LTE/286 | 1MB £80 | 2MB | £121 | 4MB £448 |
| LTE/386/SX | 1MB | £149 | 4MB | £395 |
| Portable 386/20 | 1MB | £125 | 4MB | £425 |
| 486C | | | | CALL |

Call for Portable II, III memory and expansion cards for above.

**ZENITH**

| | | | | |
|---|---|---|---|---|
| SP SX ALPHA/BETA, SX | | | 2MB | £187 |
| SP286 | | | 1MB | £138 |
| SP286E | 1MB £158 | 2MB | £187 | 4MB £462 |
| TS386E | 1MB £158 | | | 4MB £462 |
| Slimsport | 2MB | £192 | 4MB | £419 |
| MasterSport | 1MB | £ 92 | 2MB | £185 |

**NEC**

| | | | | |
|---|---|---|---|---|
| Prospeed SX/20 | 1MB | £167 | 4MB | £460 |
| Prospeed 286, 386SX/16 | 1MB | £155 | 2MB | £224 |
| | | | 4MB | £436 |
| Prospeed 386 | 2MB | £243 | 8MB | £1058 |
| Powermate SX | 2MB | £224 | 8MB | £436 |
| UltraLite 286F | 1MB | £251 | 4MB | £712 |

**SHARP** **TI TRAVELMATE**

PC6220 1MB £129 1MB £123 4MB £186

**SANYO**

17 NB 18 NB 2MB £225

**HP**

LS/12 1MB £194

**APPLE**

Power book CALL

**AST Exec Notebook**

1MB £82 4MB £276

**EVEREX TEMPO LX** 2MB £246

**EPSON** 1MB £179

| | | | | |
|---|---|---|---|---|
| LT286E, LT386SX | 1MB | £168 | 2MB | £304 |
| NB3 Notebook: | 1MB | £158 | 4MB | £560 |

**IBM**

| | | | | |
|---|---|---|---|---|
| L40SX, N33 | 2MB | £229 | 4MB | £518 |
| | | | 8MB | £1014 |

**COMMODORE LT** 2MB £225

**DELL** 320 212

1MB £80 2MB £160

Memory Direct has upgrade solution to suit most existing and new laptops and Notebooks

## 8 CORPORATE RETRO UPGRADE SERVICE

Our team of qualified engineers are waiting to assess the feasibility of upgrading all your PC's. For either 386SX, DX or 486SX platforms. Costings can consider hard-disc upgrades even installation and maintenance. More and more corporates are taking advantage of this unique service that provides computer platforms for the 1990's. Please call for more details on Kingston Authorised Corporate Dealers who can assist in this programme.

## 9 PROCESSOR UPGRADES

NSTL CERTIFIED COMPATIBLE

SX NOW range includes:

- 25MHz processor
- Supports OS/2
- Compaq 286
- AST Bravo 286
- HP Vectra

As always Kingston processor upgrades plug into existing 286 socket without using expansion slots. Cache ram gives true 386SX performance.

| | 20MHz | 25MHz |
|---|---|---|
| COMPAQ PORTABLE III | £249 | £359 |
| IBM 30 | £249 | £359 |
| IBM 50, 502, 60 | £249 | £359 |
| IBM AT/CLONES | £249 | £359 |
| COMPAQ 286 | £249 | £359 |
| AST BRAVO 286 | £249 | £359 |
| HP VECTRA | £249 | £359 |

**WINDOW BOX**
SX NOW, 4MB Ram, 20MHz Co-Pro
Windows 3.0 £595 CALL

To take full advantage of Windows turn your 286 into a full blown 386SX.

SEE SECTION 18

## 10 NEC MEMORY

FULL RANGE AVAILABLE.

## 11 NCR MEMORY

FULL RANGE AVAILABLE.

## 12




## 13 LASERJET MEMORY

**HP II, IID, IIP, III & IIIP, IIID**

1MB £79 2MB £119 4MB £219

**HP III SI** 1MB £72 4MB £239

**HP DESKJET 500, PLUS**

256kB CARTRIDGE £75

**CANON LBP 4 and LBP8/II**

1MB £157 2MB £274 4MB £332

**CANON LBP8/III**

1MB £97 2MB £180 4MB £265

**EPSON EPL6000, TOSHIBA PL6, FACIT P6060**

Also AT&T 593: Mannesman Tally, NCR 6435 and Packard Bell 9500.

2MB £155 4MB £227

**IBM 4019 AND 4029**

1MB £95 2MB £148 3.5MB £239

**PANASONIC 4420 AND 4450i**

1MB £147 2MB £220

**TI MICRO LASER & XL** 1MB £114

**OKI LASER 400, 800 & 820**

1MB £82 2MB £136
For 800 & 820 only
3MB £191 4MB £256

**APPLE/LASERWRITER II/NTX**

1MB £66 4MB £178

**EPSON EPL7000**

| | |
|---|---|
| 512kB to 2.5mB Board | £66 |
| 2mB to 4.0mB Board | £183 |
| 512kB Upgrades | £66 |

**KYOCERA KP028B** 2MB £138

Full range available

CORPORATE APPROVAL

**3.P.M.** (Third Party Memory)
- Orders despatched FED-EX next-day delivery
- Computerised Tracking allows instant POD

**£1 million**
- UK inventory
- 4000 different lines in stock

**Boffin line**
- Free technical advice
- On line Bulletin back-up
- 0800 272626

MEMBER OF EUROPEAN PC UPGRADE FORUM

**Friendly competent technical sales support, offering factory direct pricing with local service and stock**

**NTS, OLIVETTI, OPUS, PANASONIC, PHILIPS, RESEARCH MACHINES, SUN, TANDEM, TOSHIBA, TI, WYSE, ZENITH plus many more**

## 14 CHIPS AND SIMMS

**DRAM**

| | | | |
|---|---|---|---|
| 64K X 1 | £1.02 | 256K X 9 – 80 | £12.00 |
| 256K X 1 – 10 | £0.92 | 256K X 9 – 70 | £13.00 |
| 256K X 1 – 80 | £0.92 | 1M X 8 – 80 | £30.00 |
| 64K X 4 – 80 | £0.92 | 1M X 9 – 80 | £33.00 |
| 1M X 1 – 80 | £3.70 | 1M X 9 – 70 | £34.00 |
| 1M X 1 – 70 | £3.70 | 4M X 8 – 80 | £120.00 |
| 256K X 4 – 80 | £3.70 | 4M X 9 – 80 | £120.00 |
| 256K X 4 – 70 | £3.70 | 4M X 9 – 70 | £130.00 |

**SRAM (JEDEC) (SIP)**

| | | | |
|---|---|---|---|
| 512K X 8 – 80 | CALL | 256K X 8 – 80 | CALL |

Call for details on our extensive range of SRAM, EPROM, PROM, EEPROM and Cache Memory.

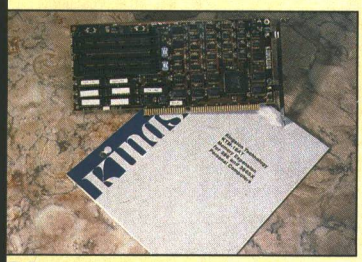
## 15 CO-PROCESSORS

| | |
|---|---|
| 80287 (6 TO 12MHz) | £65 |
| 80387 DX (all aspects) | £120 |
| 80387 SX 16MHz | £90 |
| 80387 SX 20MHz | £95 |

Product now available for new AMD 40MHz DX and 25MHz SX — CALL

## 16 KINGSTON ATABOARD

| | | | |
|---|---|---|---|
| 2MB | £195 | 4MB | £255 |
| 3MB | £305 | 8MB | £365 |
| 10MB | £425 | 16MB | £605 |



KTaBoard!

- Fully compatible with all AT slots.
- SIMM upgradeable.
- Kingston quality.
- Five year warranty.
- NSTL approved.
- S/W drives & manual.

SEE ALSO EVEREX 18

## 17 ELONEX

| | | |
|---|---|---|
| PC 286M/PC88M | 2MB Kit | £74 |
| | 4MB Kit | £146 |
| PC 386/16, B/33 | 2MB Kit | £74 |
| | 4MB Kit | £164 |
| | 8MB Kit | £288 |
| | 16MB Kit | £574 |
| PC 386/B25 | 4MB Kit | £219 |
| | 16MB Kit | £866 |
| PC 386 SXM, SXB | 2MB Kit | £76 |
| | 4MB Kit | £148 |
| | 8MB Kit | £292 |
| PC 386, V/E | 2MB Kit | £74 |
| | 4MB Kit | £146 |
| | 8MB Kit | £292 |
| | 16MB Kit | £580 |
| | 32MB Kit | £1156 |
| PC 486, V/E | 8MB Kit | £292 |
| | 16MB Kit | £580 |
| | 32MB Kit | £1156 |
| LAPTOP LT386 SX/P | 2MB Kit | £78 |
| | 4MB Kit | £140 |

## 18 EVEREX

**PC / XT**

| | | | |
|---|---|---|---|
| Maximagic W/1MB | £80 | Minimagic W/512KB | £58 |
| Maximagic W/2MB | £125 | | |

**AT**

| | | |
|---|---|---|
| RAM 3000 W/1MB | £105 | |
| RAM 3000 W/2MB | £140 | |
| RAM 3000 W/3MB | £185 | |
| MAGIC I/O | £39 | (Serial Parallel) |

## 19 AMSTRAD

| | | |
|---|---|---|
| 1236/2286 SX | 1 – 2MB | £59 |
| | 1 – 4MB | £148 |
| 2386 | 4 – 16MB | £520 |
| ALT 3865/286 | 1 – 2MB | £62 |
| | 1 – 4MB | £152 |
| 1386/2 | 1 – 4MB | £148 |
| 3286/3386 | 1 – 2MB | £62 |
| | 1 – 4MB | £148 |
| | 1 – 8MB | £240 |
| | 1 – 10MB | £528 |
| Cache Memory | | CALL |
| PCW 8250 & 1512 | | CALL |

## 20 VIDEO BOARDS

| | |
|---|---|
| VGA / 16 | £59 |
| ORCHID PRODESIGNER 1024 X 768 X 16 | £216 |

## 21 VIGLEN

**GENIE 286, 386 SX**

| | |
|---|---|
| 2MB Kit | £72 |
| 4MB Kit | £142 |

**VIG II ELITE, SX, SX/20, SL**

| | |
|---|---|
| 2MB Kit | £74 |
| 4MB Kit | £144 |

**VIG III LS**

| | |
|---|---|
| 2MB Kit | £72 |
| 4MB Kit | £142 |
| 8MB Kit | £280 |

**VIG IV**

| | |
|---|---|
| 2MB Kit | £70 |
| 4MB Kit | £138 |
| 8MB Kit | £276 |

**VIG III/25, III/33**

| | |
|---|---|
| 4MB Kit | £142 |

## 22 ACER

**1100LX, 1100/33 & 1120SX**

| | | | |
|---|---|---|---|
| 1 to 3MB | £78 | 1 to 5MB | £152 |

**1200 & 1170**

| | | | | | |
|---|---|---|---|---|---|
| 2MB | £124 | 4MB | £222 | 8MB | £568 |

## 23 H.P. VECTRA MEMORY

FULL RANGE AVAILABLE.

## 24 MEMORY MANAGEMENT & DATA COMPRESSION

**Hottest Product on the Market**

1. Need more room on your hard disk? Disk space increases by 2.3 times using this unique software package. All PCs, XT/AT/PS2 £85

2. 286 and 386 users call for more details on this unique memory management and DR DOS 5.0 package.

"All charge gives you more power and speed than a 386SX" £195
- Restricted to 512Kb? Top At Plus is
- 128K PC/XT/AT card
- Memory management software to give you 868KB of useable DOS. Unique!!

Kingston TECHNOLOGY CORPORATION · EVEREX · ULSI SYSTEMS · ORCHID · NEC · AMD

*Authorised for . . .*

*plus many others . . .*

## 25 DELL

| | | | | | |
|---|---|---|---|---|---|
| 200 | 2MB | £58 | 300 | 4MB | £132 |
| 325 | 4MB | £132 | 425/433 | 4MB | £181 |
| | 16MB | £600 | | 8MB | £362 |
| | | | | 12MB | £543 |
| 325 D/P, 486 | | | Tower | 4MB | £181 |
| | 4MB | £181 | | 8MB | £362 |
| | 8MB | £362 | | 12MB | £642 |
| | 14MB | £748 | | 28MB | £949 |

**Memory Direct**

"The most widely recognised memory supplier to the majority of the UK's top ten PC manufacturers and FT500."

## 26 ICL

| | | | | | |
|---|---|---|---|---|---|
| DRS M30 | 0.5KB | £22 | 2MB | | £58 |
| DRS M40/45 | | | MB | | £50 |
| DRS M50/55 | 1MB | £32 | 4MB | | £138 |
| DRS 75 | 8MB | £240 | 16MB | | £480 |
| DRS 95 | 4MB | £138 | 16MB | | £480 |
| | 32MB | £960 | 64MB | | £1920 |

## 27 OLIVETTI

| | | | | | |
|---|---|---|---|---|---|
| PCS 386 SX | 2MB | £58 | PCS 286 | 2MB | £56 |
| | 4MB | £138 | | 4MB | £140 |
| | 8MB | £192 | M386/25 | 2MB | £60 |
| | 8MB | £248 | M380 | 2MB | £60 |
| M290 | 2MB | £58 | M486 | 2MB | £96 |
| PRO SX | 8MB | £248 | | 4MB | £189 |
| | 17MB | £496 | | | |

## 28 FONTS

Magazine Adobe fonts available. Call for details.

**STANDARD CARTRIDGES**

| | |
|---|---|
| A, C, D, E, G, H | £49 |
| B, F, J, to Q, S to Y | £59 |
| R and Z | £69 |

**2 IN 1 CARTRIDGE**

Talent to HP Pro Collection. UK version includes Draw and OCR-A. £95

**MASTER TYPE CARTRIDGES**

| | |
|---|---|
| WordPerfect | C05 Forms |
| Microsoft | C06 Bar Codes |
| Worksheet | C07 Equations |
| Presentations | C08 Global |

Each cartridge £89

**EURO TURBO 25**

Different fonts. European version £148

**POSTSCRIPT**

Script emulation cartridge for HP II, IIP, IID & III compatible with CPI and Pacific Page 47 Double Fonts £197

**Memory Direct**

"Apple, AST, Acer, AT&T, Compaq, DELL, DEC, Epson, Everex, Elonex, GSS, Hyundai, HP, IBM, ICL, MITAC, NEC, NCR, Opus, Olivetti, Panasonic, Philips, Research Machines, Sun, S/ Graphics, Tandon, Tandy, Toshiba, Wyse, Zenith plus many more."

Kingston TECHNOLOGY EUROPE

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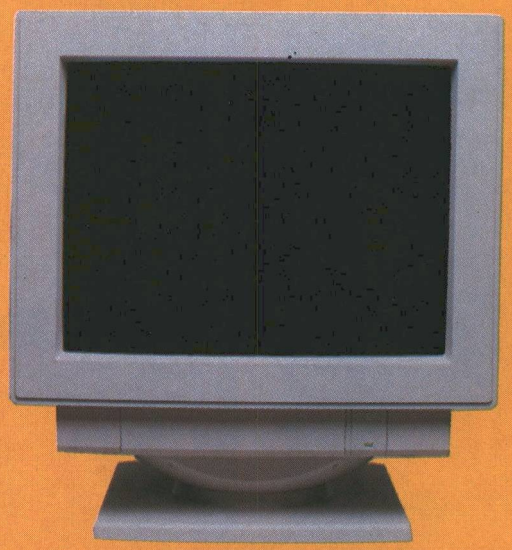
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THE MASTER SAID,

" IF YOU CHANGE YOU CAN IMPROVE.
HOW ELSE CAN YOU BE THE BEST ? "

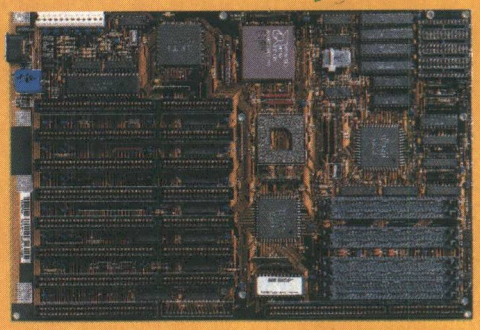


## A NEW RANGE OF ASTONISHING PCs

To build the fastest and most powerful PC on the market Ti'Ko has ensured that every component is the very best, most compatible, currently available.

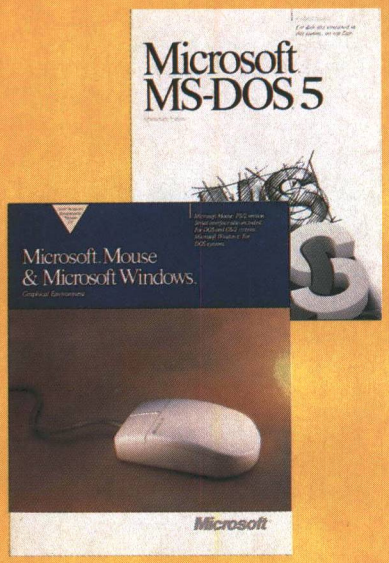
In other words we took our Japanese-rooted ideas of excellence – a philosophy of commitment to be the best – and went one step further.

## POWERFUL PROCESSORS, FAST BUSES



Ti'Ko's 386 or 486 power combined with the ultimate in memory caching radically increases speed and performance – eclipsing machines costing over twice the price.

But the fastest processor is only as effective as the PC's data delivery speed. That's where Ti'Ko's 16-bit, programmable bus – capable of running 50% faster than many comparable PCs – comes in. Which means the waiting time while applications load is slashed to a minimum.

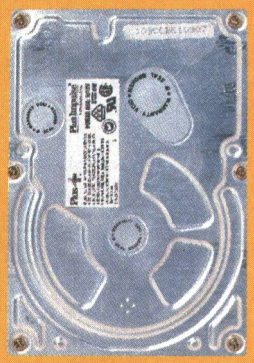



## THE MOST STABLE BIOS YET

The BIOS we've chosen gives substantially more scope to configure and operate your Ti'Ko PC. With it, you can define the boot sequence, set formats, control caching and shadowing, protect the boot sector from viruses, even add a password to protect entry to your machine. Also included is Microsoft's latest PC operating system MS-DOS 5.0, coupled with Windows 3.0, both loaded and ready for action. And we've added Q Basic, a simple yet effective programming language.

## BEST DISK DRIVES, QUICKEST ACCESS TIMES

From the entry-level 51Mb to an awesome 426Mb capacity, every Japanese designed and built hard drive has unbelievable access time – an average of less than 16 milliseconds, razed to under 9 milliseconds thanks to the 64Kb DisCache – which uses the revolutionary *look ahead pre-fetch* processor. So hard disk intensive applications, like Windows and databases, are made light work of.



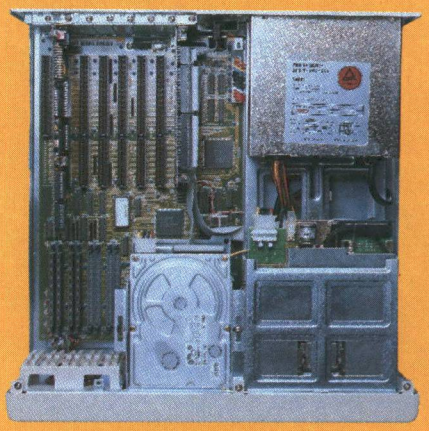



## COMPACT DUAL FLOPPY DRIVE

The floppy drives too have been replanned. Each Ti'Ko machine comes with two high-quality Japanese floppy drives. With both 5¼" and 3½" high density configurations mounted in a single half-height unit – leaving you plenty of room for extra floppy, tape, or CD ROM drives.

## TOUGH PRESSED-STEEL CASING

To make the unit even more functional, the slimline, pressed-steel, strap-reinforced case carries six expansion slots. So you not only have more desk space, you have more than enough room to upgrade.



IF YOUR VISION IS CLEAR, CLEAVE TO IT



## 32,000 ON-SCREEN COLOURS

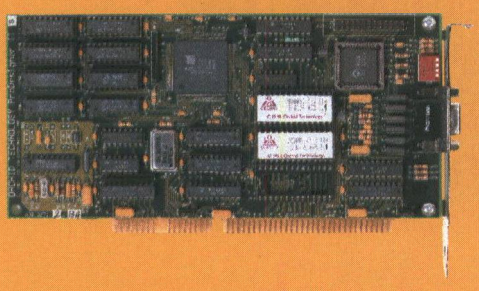
Ti'Ko's insistence on using the best monitor and videocard combination available gives you the highest level of screen accuracy around. Thanks to the very latest technology digital to analogue converter (DAC) chip, Orchid Technology's ProDesigner IIS videocard gives an astounding 32,768 on-screen colours.



## TRUE PHOTOGRAPHIC QUALITY

Applications like AutoCAD and PageMaker achieve photographic quality output. For high resolution applications, it can run in 1,024 x 768 mode with the full 256 colours. 1Mb of RAM can handle even the most memory-hungry software and guarantees a 72Hz refresh rate, that's noticeably quicker – especially when you're depending on WYSIWYG applications.

And on the front-end, the ergonomically designed display, with its .28mm dot pitch, is one of the clearest, sharpest non-interlaced monitors on the market. With a choice of 14" or 20" you can specify your own large screen workstation at a fraction of the costs demanded elsewhere.



AND FULFIL YOUR WORD.

## THE TI'KO COMMITMENT

Once you've used one of the new Ti'Ko machines, you'll discover that extra element that makes the press think they're so special. Ti'Ko's commitment to service and satisfaction.

■ The very highest spec at low prices. ■ Free one year's next-day on-site support, covering both parts and labour. ■ Access to Ti'ko's free telephone support for life. ■ No extra costs whatsoever – and you don't pay for shipping or delivery. ■ Ti'Ko's 30-day money back guarantee.

It all adds up to one of the best personal computers around, coupled with a service and customer care programme that are the envy of the Western – and Oriental – world.

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Version 3.0 Compatible Product

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COMPUTER BUYER EDITOR'S CHOICE
COMPUTER SHOPPER LABS BEST BUDGET BUY
PC TODAY WINNER

| | PSX325 | PXC325 | PXC340 | PXC420 | PXC433 |
|---|---|---|---|---|---|
| PROCESSOR | AMD 80386SX | AMD 80386SX | AMD 80386DX | i80486SX | i80486DX |
| PROCESSOR SPEED | 25MHz | 25MHz | 40MHz | 20MHz | 33MHz |
| CACHE MEMORY | n/a | 64Kb @ 25nsec | 128Kb @ 25nsec | 256Kb @ 25nsec | 256Kb @ 25nsec |
| USER MEMORY | 2Mb | 4Mb | 4Mb | 4Mb | 4Mb |
| FLOPPY DISKS | 1.2Mb & 1.4Mb | 1.2Mb & 1.4Mb | 1.2Mb & 1.4Mb | 1.2Mb & 1.4Mb | 1.2Mb & 1.4Mb |
| HARD DISK OPTIONS | 51Mb: 105Mb: 210Mb | 51Mb: 105Mb: 210Mb | 51Mb: 105Mb: 210Mb | 51Mb: 105Mb: 210Mb | 51Mb: 105Mb: 210Mb |
| HD ACCESS TIME | 9msec* | 9msec* | 9msec* | 9msec* | 9msec* |
| IO PORTS | 2 x SERIAL, 1 x PRN | 2 x SERIAL, 1 x PRN | 2 x SERIAL, 1 x PRN | 2 x SERIAL, 1 x PRN | 2 x SERIAL, 1 x PRN |
| GRAPHICS CARD | Orchid IIS 1Mb | Orchid IIS 1Mb | Orchid IIS 1Mb | Orchid IIS 1Mb | Orchid IIS 1Mb |
| MONITOR | COLOUR 256 1024 x 768<br>COLOUR 32768 800 x 600 | COLOUR 256 1024 x 768<br>COLOUR 32768 800 x 600 | COLOUR 256 1024 x 768<br>COLOUR 32768 800 x 600 | COLOUR 256 1024 x 768<br>COLOUR 32768 800 x 600 | COLOUR 256 1024 x 768<br>COLOUR 32768 800 x 600 |
| MS DOS | V 5.0 | V 5.0 | V 5.0 | V 5.0 | V 5.0 |
| SOFTWARE | WINDOWS 3.0 + MS MOUSE | WINDOWS 3.0 + MS MOUSE | WINDOWS 3.0 + MS MOUSE | WINDOWS 3.0 + MS MOUSE | WINDOWS 3.0 + MS MOUSE |
| ON SITE MAINTENANCE | 1 YEAR | 1 YEAR | 1 YEAR | 1 YEAR | 1 YEAR |
| **Price: 51Mb** | £999 | £1099 | £1199 | £1299 | £1499 |
| **Price: 105Mb** | £1099 | £1199 | £1299 | £1399 | £1599 |
| **Price: 240Mb** | £1299 | £1399 | £1499 | £1599 | £1799 |
| **Price: 426Mb** | £1899 | £1999 | £2099 | £2199 | £2399 |

* = Effective average access time with 64Kb DisCache on hard drive.

All trademarks acknowledged. E & OE. Prices and specifications are subject to change and exclude VAT.

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## 1 Help desk that talks your language

Our Help Desk offers support rather different from many Hotlines that don't seem to speak the same language as you. We give you all the friendly support you need, freely and quickly, as long as you have the system. Lines are open Monday to Friday, 9am to 6pm.

## 2 Warranty that gives peace of mind

If you have a problem at any time during the first 12 months and we cannot put it right within five working days, we will provide a replacement system of identical or superior specification. Our warranty is in addition to the rights you have by law as a consumer, and is renewable each year. Full details are available on request.

## 3 Fully tested prior to shipping

All systems are fully burn-in tested before they leave us. 12 months return-to-base warranty is included in our system prices. If there are any problems during the 30 days from initial delivery, we will arrange to collect and return the system overnight and free-of-charge.

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| 486-33 EISA 256K cache |
|---|
| 8 Megabytes Memory |
| 300 Megabyte Disk |
| High Density 3.5" Floppy Drive |
| Full Tower Case |
| 101 Key Keyboard |
| 2 Serial, 1 Parallel, 1 Games Port |
| SVGA Colour Screen (1024k Card) |
| DR DOS Version 6 |
| 3 Button Mouse |
| £2895 |

EXAMPLE

| 386-DX33 64K cache |
|---|
| 4 Megabytes Memory |
| 100 Megabyte Disk |
| High Density 3.5" Floppy Drive |
| Tower Case |
| 101 Key Keyboard |
| 2 Serial, 1 Parallel, 1 Games Port |
| SVGA Colour Screen (512k Card) |
| DR DOS Version 6 |
| 3 Button Mouse |
| £1195 |

EXAMPLE

| 386-SX25 |
|---|
| 2 Megabytes Memory |
| 40 Megabyte Disk |
| High Density 3.5" Floppy Drive |
| Desk Top Case |
| 101 Key Keyboard |
| 2 Serial, 1 Parallel, 1 Games Port |
| SVGA Colour Screen (512k Card) |
| DR DOS Version 6 |
| 3 Button Mouse |
| £795 |

EXAMPLE

| 486-33 256K cache |
|---|
| 8 Megabytes Memory |
| 100 Megabyte Disk |
| High Density 3.5" Floppy Drive |
| Full Tower Case |
| 101 Key Keyboard |
| 2 Serial, 1 Parallel, 1 Games Port |
| SVGA Colour Screen (512k Card) |
| DR DOS Version 6 |
| 3 Button Mouse |
| £1595 |

EXAMPLE

| 386-DX25 |
|---|
| 4 Megabytes Memory |
| 40 Megabyte Disk |
| High Density 3.5" Floppy Drive |
| Tower Case |
| 101 Key Keyboard |
| 2 Serial, 1 Parallel, 1 Games Port |
| SVGA Colour Screen (512k Card) |
| DR DOS Version 6 |
| 3 Button Mouse |
| £965 |

EXAMPLE

| 286-25 |
|---|
| 1 Megabyte Memory |
| 40 Megabyte Disk |
| High Density 3.5" Floppy Drive |
| Desk Top Case |
| 101 Key Keyboard |
| 2 Serial, 1 Parallel, 1 Games Port |
| SVGA Colour Screen (512k Card) |
| DR DOS Version 6 |
| 3 Button Mouse |
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EXAMPLE

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00 MINUTES. ...22,0752,000 SECONDS.....

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### 4 Free upgrade guarantee

More than 50% of new computer systems are upgraded during the first 6 months to cover that "unforseen requirement". Should this be the case with your new system we will charge only the price you would have paid when purchasing the system with no labour cost whatsoever.

### 5 Extensive on-site insurance plan

Using our considerable experience, we have devised an insurance backed optional on-site service plan that provides all the cover today's business user needs. Cover can last for 12 or 36 calendar months and is transferable. Aware of the fact that many businesses have unfortunate experience of third party maintenance companies, we allow you to nominate a repairer you feel confident about and the freedom to choose a different one during the life of the plan.

### 6 Comprehensive protection

The plan is valid for all member states of the European Community.
Unlimited 8 hour on-site reaction to breakdown.
Unlimited parts.
Unlimited labour.
Up to £7,500 rental charges for a replacement machine.
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Up to £50,00 to cover increased costs of working.
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### 7 Specialists systems building

Just because you have specialised needs, it doesn't mean you have to lose out. We can supply specialist users with what they need. Ring for our quote for what you want.

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| 386-SX20 Notebook |
|---|
| 1 Megabyte Memory |
| 40 Megabyte Disk |
| High Density 3.5" Floppy Drive |
| VGA FSTN LCD Screen |
| Rechargeable Battery |
| Weight: 3kg |
| £1049 |

EXAMPLE

| 386-DX33 Notebook |
|---|
| 2 Megabytes Memory |
| 60 Megabyte Disk |
| High Density 3.5" Floppy Drive |
| VGA LCD Screen |
| Rechargeable Battery |
| Weight: 3kg |
| £1449 |

EXAMPLE

| 486-DX33 Notebook |
|---|
| 2 Megabytes Memory |
| 80 Megabyte Disk |
| High Density 3.5" Floppy Drive |
| VGA Screen |
| Rechargeable Battery |
| Dimensions: 12.5" (W) x 12" (D) x 2.8: (H) |
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- Full colour scanning comes to your Desktop.
- Up to 400 dpi resolution, selectable in 10 dpi steps.
- Top of the line Hand Held unit with 105mm scanning width.
- Supplied with Color Maestro software offering a range of features too comprehensive to list.
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- 640K required to run Color Maestro software.
- Supports many Super VGA Modes (EMS is required for 256 colour images).
- Hard disk requires DOS 3.0 or later.
- Windows 3.0 required for iPhoto software.
- Supplied with 5.25" disks (please add £3.00 if you require 3.5" software)

# GENIUS TRACKBALL




**ONLY £49.99 includes P+P**

- An exciting alternative to the conventional mouse.
- Uses less desk space, since the Trackball doesn't need to move around.
- Full Microsoft compatibility. 9 pin, 25 pin and PS2 connections.
- Ideal for CAD applications.
- Gives more precise cursor movement, selectable speeds, 2 or 3 button modes.
- Comes complete with Color Maestro and Menu Maker software packages.
- Supplied with 5.25" disks (please add £3.00 for 3.5")

# GMF302 THE PERFECT MOUSE SOLUTION



- GMF302 has all the answers when a true Microsoft mouse is required. When combined with Dr Genius Graphics Package, Menu Maker software & a free Mouse Mat & Holder, you simply can't get a better deal.
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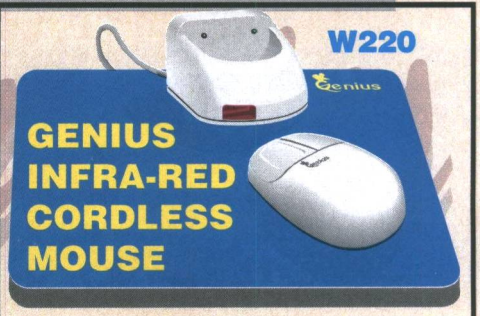
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- i486-33MHz MAINBOARD
- AMI BIOS (with password)
- 64K CACHE (256K max)
- SHADOW RAM (System/Video)
- 8MB RAM (32MB max)
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- 4MB RAM (32MB max)
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SPECIAL OFFER SYSTEM — SUPERVGA 4MB 89MB

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### ALL SYSTEMS INCLUDE THE FOLLOWING AS STANDARD *

- 1.44MB FDD
- 1MB VGA CARD (with 1MB installed)* ( 1024x768 pixels, 256 colours )
- 14" COLOUR super VGA MONITOR*
- SMALL FOOTPRINT DESKTOP CASE
- 200W PSU
- 102 UK KEYBOARD
- 1 PARALLEL PORT
- 2 SERIAL PORTS
- SERIAL MOUSE*
- WINDOWS 3.0*
- MS DOS 5.0

* The 286/12 special comes with a 256KB VGA card, a colour VGA monitor (640x480) and does not have Windows 3 and mouse .

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• 20MHz Zero wait state main board with 80386SX-20 Microprocessor, AWARD BIOS, Shadow RAM for System & Video BIOS • Backlit LCD VGA display • Nap & Sleep mode for battery saving • 1.44MB Floppy drive • 1 Serial, 1 Parallel & 1 mouse port • Mains adaptor/charger (110-240V) • MS-DOS 5 • Size: 5.5(H)x28.5(W)x22(D) • Weight: 3Kg • Options for maths co-processor, external keyboard, monitor & scanner.

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This is an intelligent controller that uses its own 80186 microprocessor to free your computer's CPU from sitting around and waiting for the disk. Cache memory size 1MB (max 16MB).

Average HDD speed: **0.3ms** (Core test on a 28ms hard disk)

"The addition of the hard disk caching controller gives the balance that you'd otherwise need an EISA-based system for, but at considerably lower cost. You could opt not to buy the caching hard disk controller, and save £285. But that'd be a false economy. You'd be the first to kick yourself if you experienced what the machine is capable of with it."
*Computer Buyer, AUG 91*

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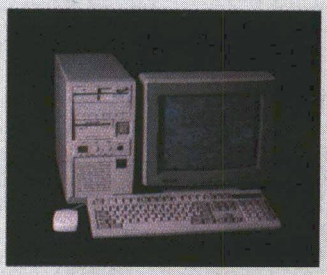
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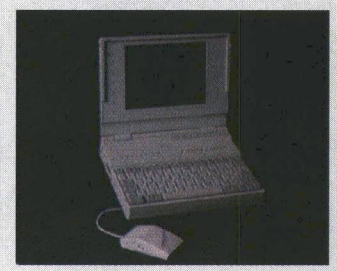
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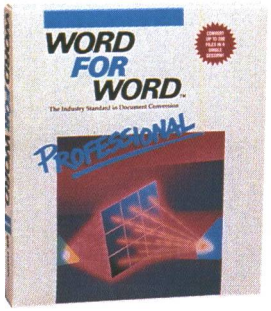
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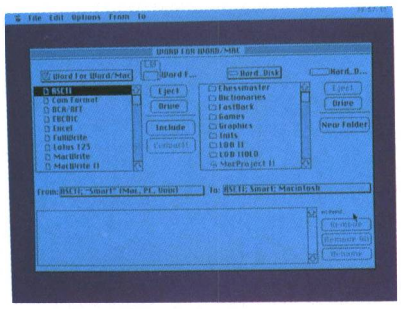
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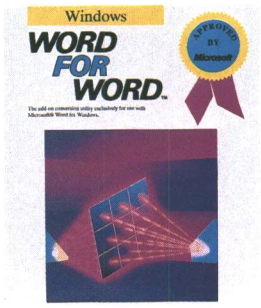
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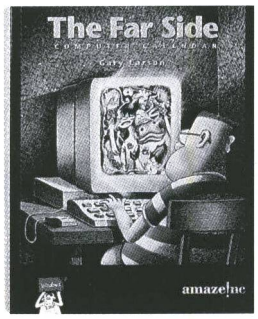
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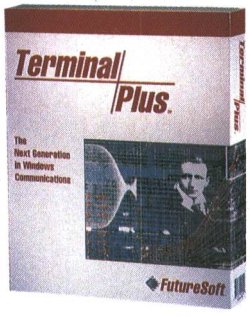
**Word for Word V5.0 -- £55**




### The Far Side Calendar

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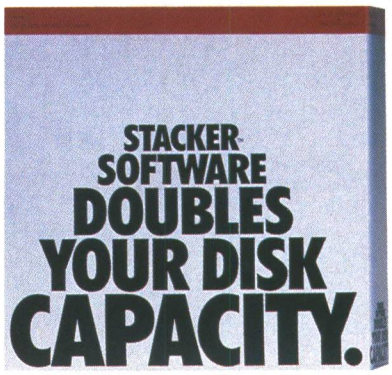
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Terminal Plus, the full-featured user friendly Windows communications program features easy to use pull-down menus, dialogs, and help to guide the novice or expert through communications. It supports Xmodem/CRC, Ymodem/Batch/G, Zmodem, Compuserve B+, and Kermit protocols. Terminal emulations include ANSI Color (BBS), DEC VT52/100/220, & Compuserve. Comes complete with script language, full dialing directory support and more!

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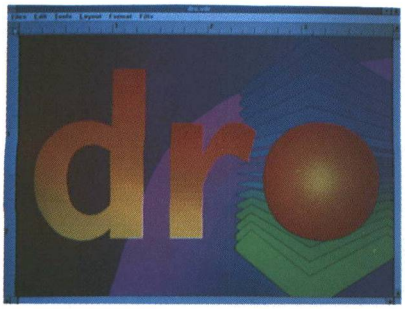
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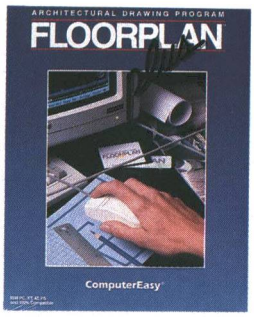
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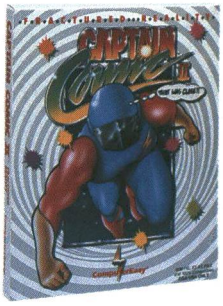
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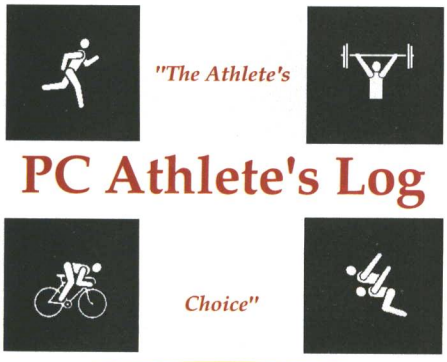
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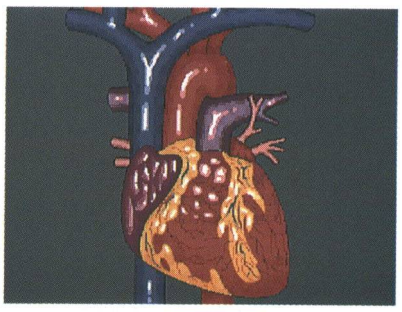
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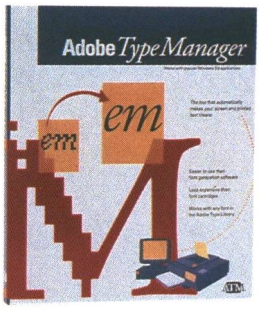
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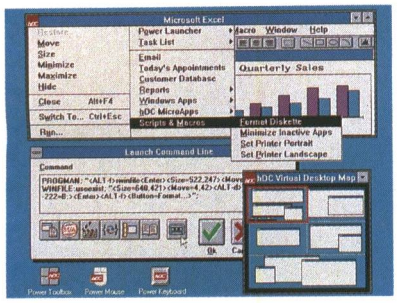
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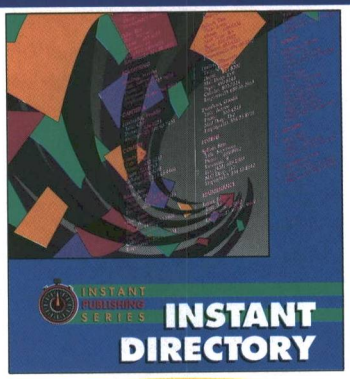
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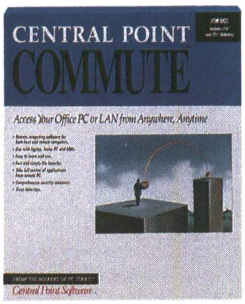
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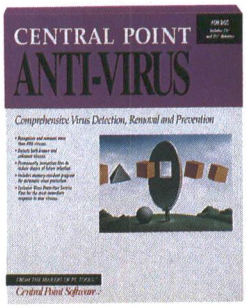
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Central Point Commute is the program that lets you access your office PC or LAN anywhere, anytime. Use any PC, including laptop's and home PC's, to retrieve files, look up information, read E-Mail, and run PC applications. Makes a great tool for analysts providing support to users over a LAN or a modem. Operates over Novell Netware V2.15 or higher. Run Lotus 1-2-3, WordPerfect, dBASE, most DOS applications, and Windows applications.

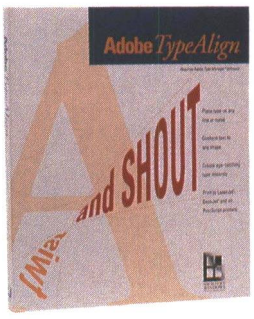
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| dBase IV V1.1 Developer's Edition | £448 |
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| Fox Graph | £ 90 |
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| Justwrite V1.0 (WIN) | £ 70 |
| MS Word V2.0 for Windows | £174 |
| MS Word V5.5/Grammatik IV Bundle.. | £123 |
| PFS Pro Write Plus for Windows | £ 87 |
| PFS Pro Write V2.2 for DOS | £104 |
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| WordPerfect for Windows | £152 |
| WordStar V6.0 / Windows | £146 |
| **Word for Word Professional V5.0** | **£ 99** |
| **Windows/Word for Word V5.0** | **£ 55** |

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| **Aldus Freehand V3.0 for Windows** | **£222** |
| Corel Draw V2.0 | £204 |
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| Design CAD 2D V5.0 | £ 92 |
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| **FloorPlan Plus** | **£ 59** |
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| **DR MultiUser DOS** | **£247** |
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| **MS Serial or Bus Mouse w/Windows** | **£ 85** |
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| Harvard Project Manager V3.0 | £247 |
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| MS Project V4.0 | £174 |
| MS Project V1.0 for Windows | £243 |
| **On Target V1.0 (WIN)** | **£138** |
| SuperProject V2.0 | £289 |
| **Time Line V5.0** | **£243** |

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| Lotus 1-2-3 V2.3 | £184 |
| Lotus 1-2-3 V3.1 Plus | £226 |
| **Lotus 1-2-3 for Windows** | **£232** |
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| Far Side Calendar for Windows | £ 26 |
| **HDC PowerLauncher** | **£ 30** |
| HDC FileApps | £ 39 |
| ICON Designer | £ 18 |
| **Norton Desktop for Windows** | **£ 56** |
| WinConnect | £ 34 |
| **WinFAX Pro** | **£ 39** |

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| Central Point Antivirus V1.1 | £ 45 |
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| Borland C++ V3.0 | £176 |
| Borland C++ V3.0 and Appl. Framwk | £245 |
| MS C Compiler w/Windows SDK | £273 |
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| Ventura DataBase Publisher for Windows | £229 |
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### CD-ROM

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|---|---|
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| CD Game Pack | £ 28 |
| MS MultiMedia Beethoven 9th Sympony | £ 32 |
| MS MultiMedia Works for Windows | £ 75 |
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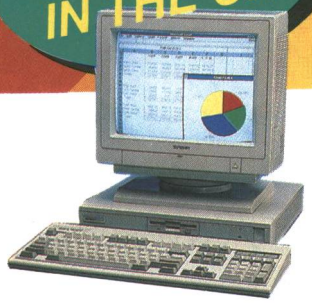
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| 486-33 EISA Tower 1000Mb 8Mb | £4819 |
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| **Screen Options** | |
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| PC 5286 HD40 3.5" 1Mb Games pack colour | £649 |
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| HR VGA Colour | (extra) £150 |
| Sony VGA Colour for 4386 | (extra) £150 |

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| ALT 286 40 | £749 |
| ALT 386 40 | £1107 |
| ALT 386 80 4Mb | £1199 |
| ACL 386 120 4Mb | £POA |
| ANB 386sx-16 20 | £POA |
| ANB 386sx-20 40 | £POA |

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| 286 20 | £POA |
| 286 60 | £POA |
| 386sx-20 20 | £POA |
| 386sx-20 60 | £POA |
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| NB 386sx-20 40 2Mb | £1302 |
| NB 386sx-20 60 2Mb | £1389 |

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| | 10 user | £889 |
| | 50 user | £1489 |
| | 100 user | £2389 |
| **Novell 3.11** | 20 user | £1489 |
| | 100 user | £2989 |
| | 250 user | £5289 |
| NE 1000 8 bit ethernet card | | £113 |
| NE 1000 compatible card | | £80 |
| NE 1000 remote boot PROM | | £39 |
| NE 2000 16 bit ethernet card | | £158 |
| NE 2000 compatible card | | £90 |
| NE 2000 remote boot PROM | | £39 |
| NE 3200 EISA fileserver card | | £749 |
| NE/2 16 MCA card | | £148 |
| NE/2-32 MCA card | | £378 |
| 16' Thin ethernet cable connector | | £39 |
| T Piece alone | | £12 |
| 50 Ohm Terminator | | £12 |

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| KXP 1123 24 pin | £POA |
| KXP 1124i 24 pin | £POA |
| KXP 1695 9 pin wide | £POA |
| KXP 1624 24 pin wide | £POA |
| KXP 1654 24 pin wide | £POA |
| KXP 2624 24 pin wide | £POA |

### Olivetti

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| *JP350 Inkjet | £293 |
| *JP150 Inkjet | £219 |
| *DM109 | £149 |
| *DM309E | £309 |
| *DM309LE | £379 |
| *DM124 | £189 |
| *DM124C | £208 |
| *DM324E | £439 |
| *DM324LE | £539 |
| *DM634E | £869 |
| *TH760S | £599 |

### Canon

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|---|---|
| BJ10e | £POA |
| BJ10ex | £195 |
| *BJ300 | £345 |
| *BJ330 | £393 |
| BJC 800 | £POA |

### OKI

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| ML182 elite | £POA |
| ML 320 | £POA |
| ML 321 | £POA |
| ML 380 | £POA |
| ML 390 | £POA |
| ML 391 | £POA |
| ML 393 Colour | £POA |

### Epson

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|---|---|
| LX-850 | £145 |
| FX-850 | £270 |
| FX-1050 | £343 |
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| DFX 8000 | £1976 |
| LQ 200 | £153 |
| LQ 450 | £173 |
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| LQ 1070 | £325 |
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| 224 D 24 pin | £159 |
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| Swift 9X | £204 |
| Swift 24e | £219 |
| Swift 24 | £209 |
| ProJet | £299 |
| PN-48 | £211 |

### Hewlett-Packard

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| *ThinkJet | £267 |
| *QuietJet | £300 |
| *QuietJet+ | £385 |
| DeskJet 500 | £299 |
| DeskJet 500c Colour | £POA |
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| *PaintJet XL | £1049 |
| Ruggedwriter | £925 |

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| LC15 | £177 |
| LC24-10 | £140 |
| LC24-200 | £171 |
| LC24-200 Colour | £210 |
| LC24-15 | £295 |
| ZA200 Colour | £239 |
| ZA 250 Colour | £300 |
| XB24-200 Colour | £301 |
| XB24-250 Colour | £362 |

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| *HP IIIP | £689 |
| *HP III | £1020 |
| *HP IIID | £1544 |
| *HP IIISi | £2515 |

### Panasonic

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|---|---|
| *KXP 4420 | £POA |
| *KXP 4450i | £POA |
| *KXP 4455 2Mb | £POA |

### Olivetti

| | |
|---|---|
| *PG306 | £739 |
| *PG306 Postscript | £1139 |

### Canon

| | |
|---|---|
| *LBP 4 | £609 |
| *LBP III | £980 |
| *LBP III T | £134 |
| *LBP III R | £1445 |

### Epson

| | |
|---|---|
| *EPL 7100 | £638 |
| *EPL 7500 Postscript | £1175 |

### NEC

| | |
|---|---|
| *Silentwriter2 266 | £688 |
| *Silentwriter2 S60P PS | £1107 |
| *Silentwriter2 290P PS | £1414 |

### OKI

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|---|---|
| *Okilaser 400 | £POA |
| *Okilaser 800 | £POA |
| *Okilaser x | £POA |
| *Okilaser 800D | £POA |
| *Okilaser 840P | £POA |

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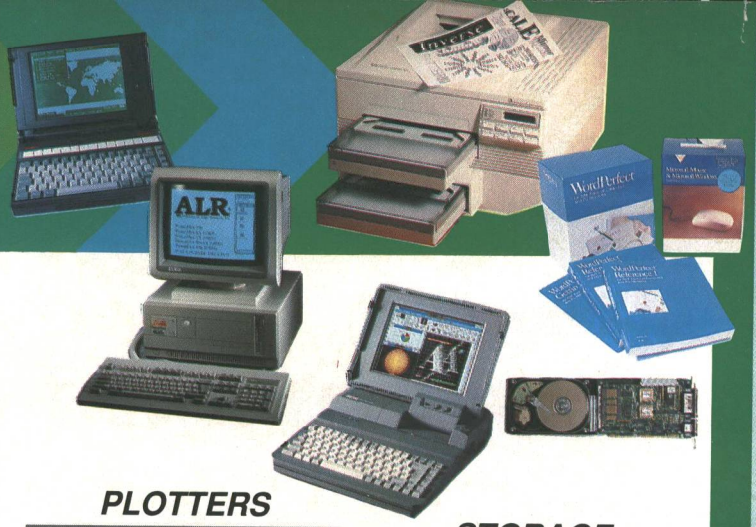
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| *LP-4 | £584 |
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| *7570A A1 | £1949 |
| *7575A A1 | £2565 |
| *7576A A0 | £3605 |
| *7595BU A0 | £4815 |
| *7596BU A0 | £5805 |
| *7599BU A0 | £6915 |

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| Hewlett Packard | |
|---|---|
| *Scanjet Plus | £485 |
| PC interface | £265 |
| PS/2 interface | £271 |
| Document feeder | £281 |
| *Scanjet IIC AT | £1184 |
| *Scanjet IIC PS/2 | £1184 |

| Panasonic | |
|---|---|
| FXRS-506 | £590 |
| FXRS-307 | £814 |
| XT/AT interface | £123 |
| PS/2 interface | £194 |
| Auto Document Feeder | £349 |
| SCSI interface | £189 |

## MONITORS

| NEC | |
|---|---|
| 2A | £254 |
| 3D | £336 |
| 2A + 600 X 800 256K card | £299 |
| 3D + 1024 X 768 1Mb card | £399 |

| Panasonic | |
|---|---|
| *C1381 14" Panasync (1024 x 768 | £POA |
| *TX1703 17" Panasync (1280 x 1024) | £POA |
| TX2013 20" Panasync (1280 x 1024) | £POA |
| C1381 + 1024 X 768 1Mb card | £299 |
| TX1703 + 1204 X 768 1Mb card | £849 |
| TX1703 + 1280 X 1024 card | £999 |
| TX2013 + 1280 X 1024 card | £1399 |

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|---|---|
| 16 bit S-VGA 256K 800 x 600 | £49 |
| 16 bit S-VGA 1Mb 1024 x 768 | £99 |
| 16 bit S-VGA 1Mb 1280 x 1024 | £299 |

*(All S-VGA cards have drivers for Windows 3)*

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| Pace Internal Modems | |
|---|---|
| Linnet Plus + software | £97 |
| Linnet 1200 + software | £152 |
| Linnet 2400 + software | £188 |
| Linnet Quad + software | £225 |
| Linnet 32 + software | £365 |

| Pace External Modems | |
|---|---|
| Linnet Plus + software | £97 |
| Linnet 1200 + software | £152 |
| Linnet 2400 + software | £188 |
| Linnet Quad + software | £225 |
| Ultralink Quad | £249 |
| Linnet 32 | £364 |
| Ultralink 32 Plus | £559 |

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| 16 bit Smartcards | |
|---|---|
| Smartcard 100XL | £345 |
| Smartcard 200 XL | £645 |
| Smartcard 340 XL | £1145 |

## SOFTWARE

| Wordprocessors | |
|---|---|
| Displaywrite V5 | £240 |
| Wordperfect 5.1 | £198 |
| Wordperfect for Windows | £216 |
| Microsoft Word 5.5 | £227 |
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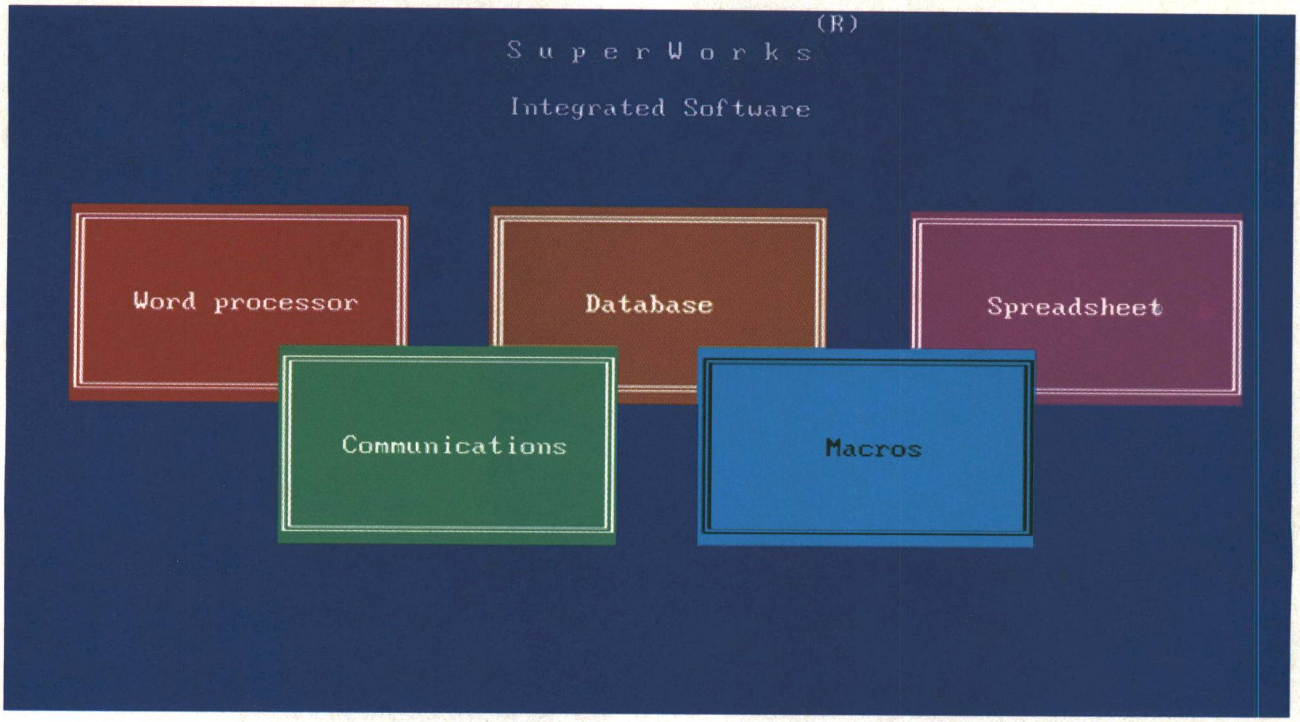
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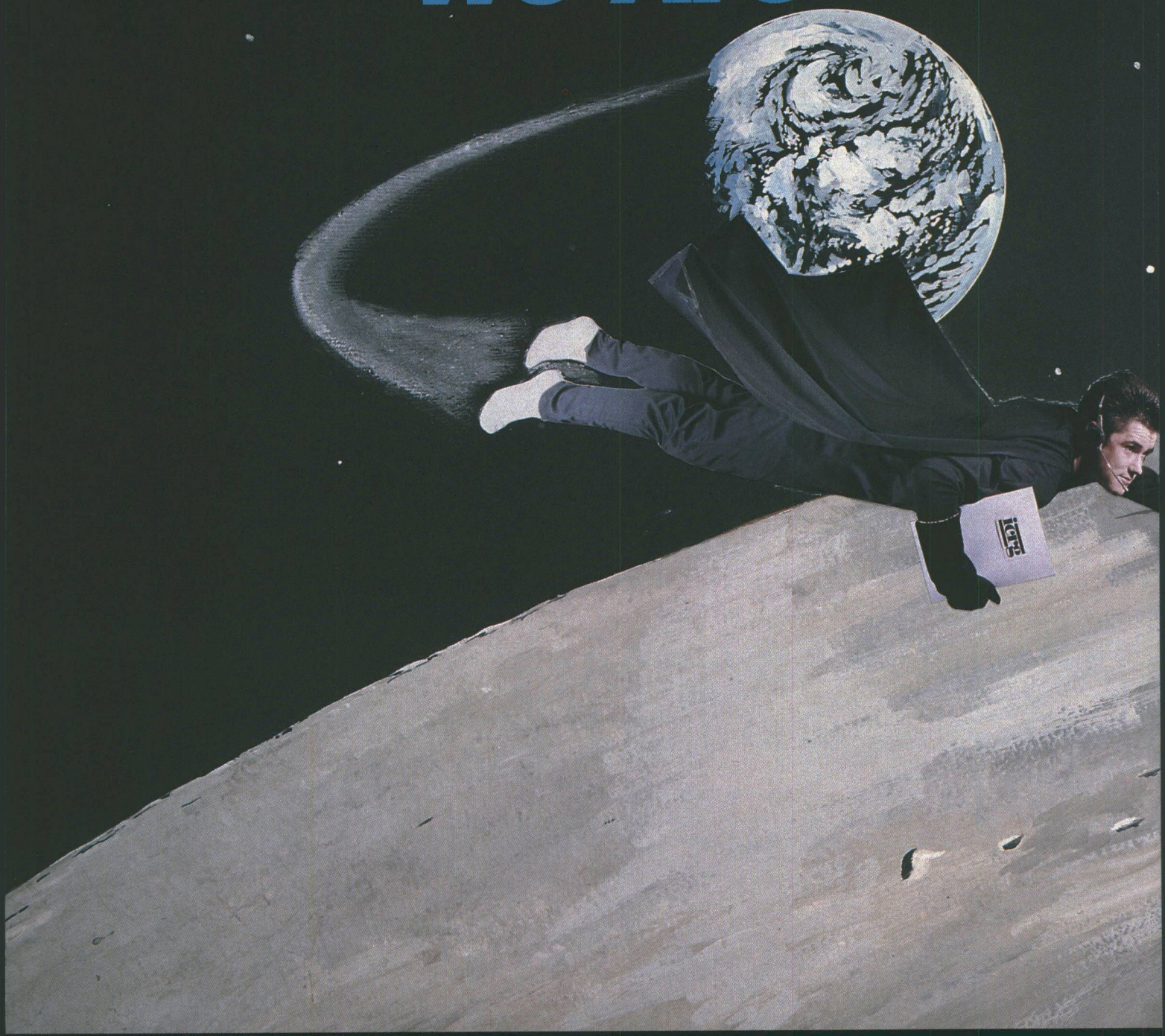
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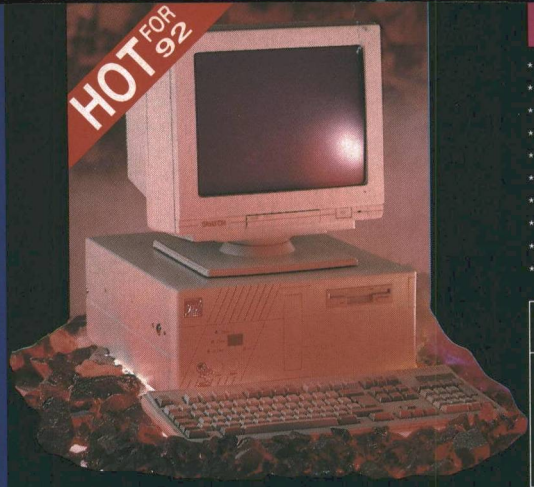
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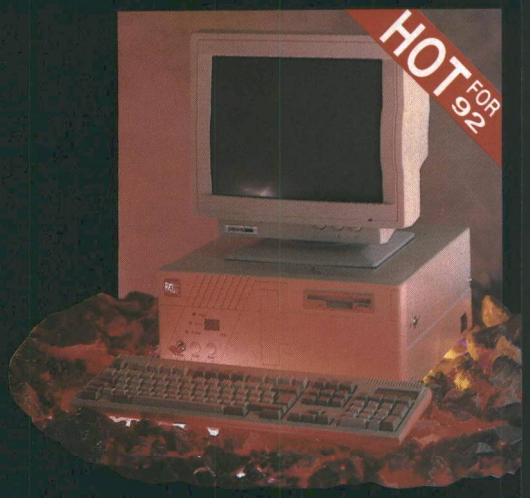
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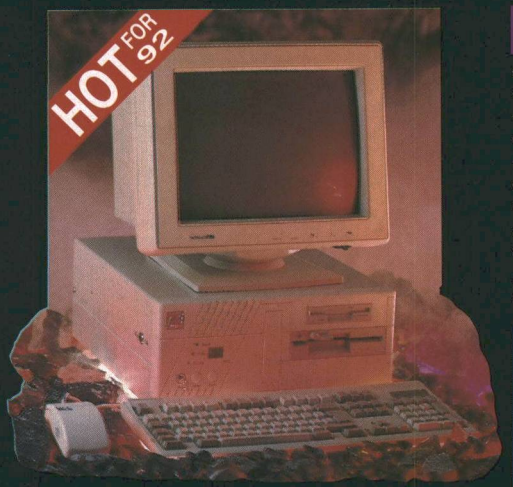
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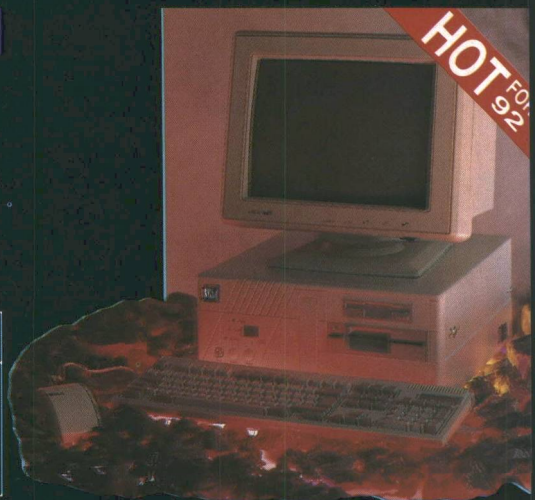
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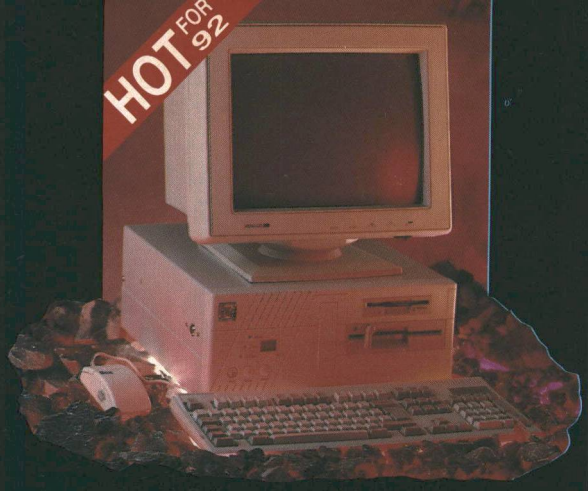
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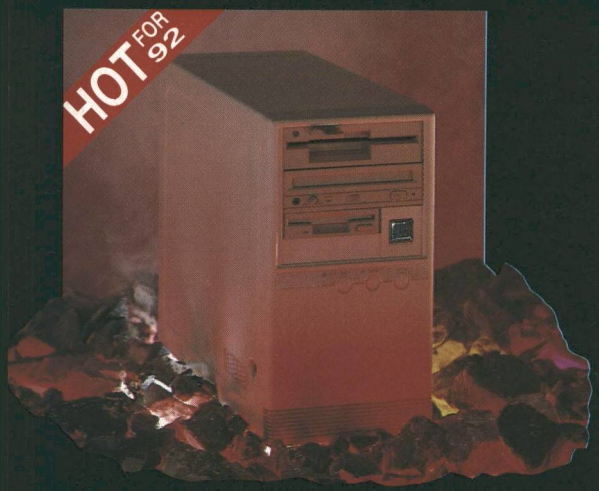
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| 44MB | £815 | £889 | £939 | £1065 | £1735 |
| 89MB | £889 | £969 | £1019 | £1145 | £1825 |
| 124MB | £945 | £1025 | £1075 | £1199 | £1875 |
| 211MB | £1109 | £1189 | £1235 | £1365 | £2045 |
| 337MB | £1559 | £1665 | £1689 | £1799 | £2499 |

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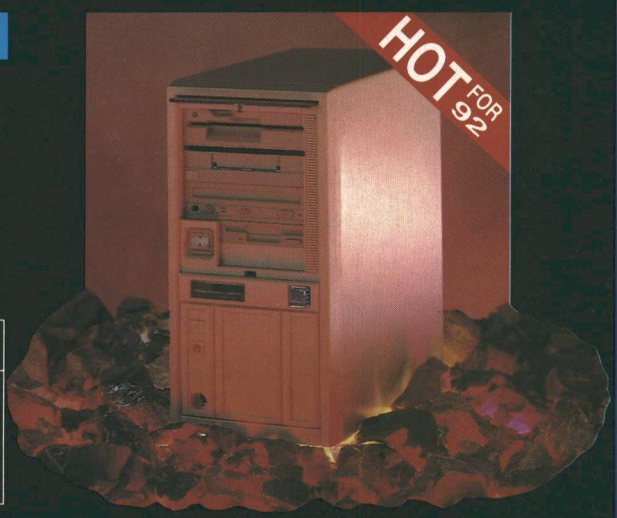
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| T4400SX | £3035 | | |

### ★ CAD/CAM/DTP ★

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|---|---|
| NEC Multisync 3FG 15" | £449 |
| NEC Multisync 4FG 15" | £559 |
| NEC Multisync 5FG 17" | £1025 |
| NEC Multisync 6FG 21" | £1865 |
| Hitachi Hi-Scan 20/FST | £POA |
| Sony Trinitron/Taxan/Philips | £POA |

**1024x768 Boards from METHEUS, ARTISTE, HERCULES, VEGA VIDEO-7 INTEL CO-PROCESSORS**

### ★ PRINTERS & PLOTTERS ★

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| EPSON LX400 | £109 |
| EPSON FX1050 | £349 |
| EPSON LQ400 | £165 |
| EPSON LQ570 | £249 |
| EPSON LQ1050/LQ1170 | £475 |
| EPSON LQ2550 | £709 |
| EPSON DFX8000 | £1949 |
| CANON BJ300 | £379 |
| CANON BJ10EX | £245 |
| HP PAINTJET | £599 |
| HP SCANJET | £639 |
| PANASONIC 1124i | £208 |
| HP DESKJET 500 COL | £525 |

**FUJITSU, BROTHER, NEC etc etc ROLAND AND HP PLOTTERS**

### ★ COMPAQ DESKPRO ★

| | |
|---|---|
| DESKPRO 286N 1 | £699 |
| DESKPRO 286N 40 | £999 |
| DESKPRO 386N 1 | £875 |
| DESKPRO 386N 40 | £1155 |
| DESKPRO 386S 40 | £1409 |
| DESKPRO 386S 84 | £1689 |
| DESKPRO 386S/20 60 | £1689 |
| DESKPRO 386/20 120 | £1999 |
| DESKPRO 386/20E 40 | £2099 |
| DESKPRO 386/20E 110 | £2539 |
| DESKPRO 386/25E 60 | £2539 |
| DESKPRO 386/25E 120 | £2799 |
| DESKPRO 386/33L 120 | £3799 |
| DESKPRO 386/33L 320 | £4699 |
| DESKPRO 386/33L 650 | £5949 |
| DESKPRO 486/33L 120 | £5599 |
| DESKPRO 486/33L 320 | £6789 |
| DESKPRO 486/33L 650 | £7969 |
| DESKPRO 486/50L 120 | £6819 |
| DESKPRO 486/50L 340 | £7899 |
| DESKPRO 486/50L 510 | £8539 |

### ★ COMPAQ MODULAR ★

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|---|---|
| DESKPRO 386/25M60 | £2499 |
| DESKPRO 486S/16 120 | £3039 |
| DESKPRO 486S/25 60 | £3079 |
| DESKPRO 486/33M 120 | £3969 |

### ★ COMPAQ SYSTEM PRO ★

| | |
|---|---|
| SYSTEMPRO 386-240 | £5929 |
| SYSTEMPRO 386-420 | £7039 |
| SYSTEMPRO 386-840 | £9589 |
| SYSTEMPRO 486-240 | £8139 |
| SYSTEMPRO 486-420 | £9319 |
| SYSTEMPRO 486-840 | £11799 |

### ★ COMPAQ PORTABLES/PERIPHERALS ★

| | |
|---|---|
| LTE/286/40 | £1449 |
| LTE/386/60 | £2299 |
| SLT/286/40 | £1979 |
| SLT/386 60 | £2299 |
| SLT/386 120 | £2729 |
| PORT 486/120 COL | £5769 |
| 14" VGA MONOCHROME DISPLAY | £159 |
| 14" VGA COLOUR DISPLAY | £319 |
| COMPAQ DOS VERSION 5.0 | £50 |

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| HP LASERJET IIIP | £7** |
| HP LASERJET IIISi | £24** |
| PANASONIC 4420 | £679 |
| PANASONIC 4450i | £1028 |
| BROTHER HL-4 | £715 |
| CANON LBP8 | £999 |
| KYOCERA F800T | £944 |
| NEC SILENTWRITER 290 | £1409 |

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3-COM 3C503/505/523
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ARCNET/PRONET/G-NET
CABLING INSTALLATION & TRAINING

## ★ SOFTWARE ★

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| LOTUS FOR WINDOWS | £349 |
| dBASE IV V1.1 | £399 |
| WORDPERFECT V5.1 | £259 |
| SMARTWARE II | £439 |
| MICROSOFT WINDOWS V3.0 | £69 |
| VENTURA GOLD | £429 |
| PAGEMAKER | £469 |

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| 30-286 (10MHz) – 45Mb | £759 |
| 35-040 (20MHz) – 40Mb | £849 |
| 40-043 (20MHz) – 40Mb | £1199 |
| 40-045 (20MHz) – 80Mb | £1399 |

## ★ IBM MCA BUS ★

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|---|---|
| 55SX-041 (16MHz-40Mb) | £1079 |
| 55SX-081 (16MHz-80Mb) | £1269 |
| 56SX-043 (20MHz-40Mb) | £1239 |
| 57SX-045 (20MHz-80Mb) | £1549 |
| 57SX-045 | £1549 |
| 70-081 (20MHz-80Mb) | £1769 |
| 80-M81 (20MHz-40Mb) | £2039 |
| 80-M16 (20MHz-160Mb) | £2369 |
| 80-M21 (20MHz-320Mb) | £3149 |
| 80-A16 (25MHz-160Mb) | £2950 |
| 80-A31 (25MHz-320Mb) | £3519 |
| 90-AJ9 (25MHz-160Mb) | £5199 |
| 90-AK9 (33MHz-160Mb) | £5449 |
| 90-AKD (33MHz-320Mb) | £6229 |
| 95-AGG (20MHz-16Mb) | £3989 |
| 95-AJD (25MHz-320Mb) | £5909 |
| 95-AKF (33MHz-400Mb) | £6809 |

## ★ IBM PERIPHERALS ★

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|---|---|
| 55LS-LTO (TOKEN RING 16/4) | £1045 |
| 55LS-LEO (ETHERNET) | £895 |
| 8503 12" VGA MONO MONITOR | £155 |
| 8518 14" VGA COLOUR MONITOR | £385 |
| 8515 14" XGA COLOUR MONITOR | £449 |
| 8513 12" VGA COLOUR MONITOR | £349 |
| ENHANCED KEYBOARD | £145 |
| IBM DOS 5.0 | £65 |

## ★ IBM PORTABLES ★

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| P70-K21 (20MHz-120Mb) | £2599 |
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| P75-401 (33MHz-400Mb) | £7945 |
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| | 80386SX - 25MHz Processor | 80386DX - 33MHz Processor | 80486DX - 33MHz Processor |
|---|---|---|---|
| | 40Mb hard disk, 2Mb RAM, 14" Super VGA colour monitor (1024 x 768), 2 serial, 1 parallel, 1 game port, 3.5" disk drive, enhanced 102 key UK keyboard, turbo switch, turbo LED, reset button. Expansion slots = 4 x 16bit, 2 x 8 bit, landmark speed 26 MHz. | 90Mb hard disk, 64K cache memory, 2Mb RAM, 14" Super VGA colour monitor (1024 x 768), 2 serial, 1 parallel, 1 game port, 3.5" disk drive, enhanced 102 key UK keyboard, turbo switch, turbo LED, reset button. Expansion slots = 6 x16bit, 2 x 8bit landmark speed 56MHz | 105Mb hard disk, 64K cache memory, 4Mb RAM, 14" Super VGA colour monitor (1024 x 768), 2 serial, 1 parallel, 1 game port, 3.5" disk drive, enhanced 102 key UK keyboard, turbo switch, turbo LED, reset button. Expansion slots = 6 x16bit, 2 x 8bit landmark speed 56MHz |
| | **£795** | **£1119** | **£1499** |
| With KXP-1170 9 pin DMP | **£899** | **£1229** | **£1599** |
| With KXP-1124i 24 pin DMP | **£939** | **£1269** | **£1649** |
| With KXP-4420 Laser Printer | **£1449** | **£1779** | **£2149** |

## AMSTRAD PCW's

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|---|---|
| PCW9256 | £320 |
| PCW9512 | £359 |
| PCW9512 + sheetfeeder | £399 |
| PCW9512 + BJ10E | £499 |

## COMPUTERS

**Amstrad**

| 3086 Range | 12" mono | 14" mono | 14" HRCD |
|---|---|---|---|
| HD3.5" | £369 | £439 | £519 |

FREE Lotus Works

| 3286 Range | | | |
|---|---|---|---|
| HD 40 3.5" | £479 | £549 | 629 |
| HD 40 3.5" | £519 | £589 | £669 |

| 3386 SX Range | | | |
|---|---|---|---|
| HD40 | £629 | £699 | £779 |
| HD80 | £829 | £899 | £979 |

| Generation | 10" VGA Mono | 10" VGA HRCD |
|---|---|---|
| 4386SX HD80 | £760 | £999 |

| New 5086 Series | 14" FMD | 14" CDR | 14"HRCD |
|---|---|---|---|
| SD | £299 | £369 | £449 |
| DD | £329 | £399 | £479 |
| HD40 | £379 | £449 | £529 |

FREE Microsoft Works

| 5286 Range | | | |
|---|---|---|---|
| SD | £419 | £489 | £569 |
| HD | £499 | £569 | £649 |

**Amstrad Series 5 Family Pack**
5286 HD40, 14" VGA colour & monitor, soundcard + joystick, speakers, mouse, MS DOS 3.30, links, F-15 II Prince of Persia games, Microsoft Word ..... £599

## PORTABLES

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|---|---|---|
| Amstrad ALT 286 20Mb | Inc. BJ10E | £1035 |
| Amstrad ALT 286 40Mb | Inc. BJ10E | £1209 |
| Amstrad ALT 286SX 40Mb | Inc. BJ10E | £1350 |
| Amstrad ALT 386SX 80Mb | Inc. BJ10E | £1589 |
| Amstrad ALT 386SX Notebook 20Mb | | £1110 |
| Amstrad ANB 386SX Notebook 40Mb | | £1349 |
| Amstrad ACL 386SX 120Mb colour | Inc. BJ10E | £3199 |
| ALT Laptop Carry Case | | £39 |

# Panasonic
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**CF170**
V20 10MHz processor, 640K RAM expandable to 1.6Mb, backlit supertwist LCD-CGA graphics, 1 x 20Mb HD (23ms), 1 x 1.44Mb 3.5" FD, 2.8Kg weight inc. battery, 1 parallel & serial interface, 4 hr battery operation ..... £689

**CF270**
80C 286 16.8MHz processor, 1Mb RAM expandable to 5Mb, backlit supertwist LCD-VGA graphics, 1 x 20Mb HD, 1 x 1.44Mb 3.5" FD, 3.1Kg weight inc. battery, interfaces - 1 x serial, 1 x parallel, 1 x VGA analogue, 1 x keyboard, 3 hr battery operation ..... £969

**CF270 H6**
As above with 60Mb hard disk ..... £1249

**CF370**
80C 386/20MHz processor, 1Mb RAM expandable to 5Mb, backlit supertwist LCD-VGA graphics, 1 x 60Mb HD, 1 x 44Mb 3/5" FD, 3.1Kg weight inc. battery, interfaces - 1 x serial, 1 x parallel, 1 x VGA analogue, 1 x keyboard, 1 x RGB, 3 hr battery operation ..... £1689

## PRINTERS

**Canon**

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|---|---|---|---|
| BJ10ex | £215 | | |
| BJ300 | £375 | | |
| BJ330 | £429 | | |
| PJ1080A colour | £460 | | |

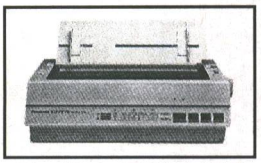
**Epson**

| | | | |
|---|---|---|---|
| LQ-450 | £229 | LX-400 | £129 |
| LQ-570 | £269 | LX-850 | £179 |
| LQ-860 colour | £499 | FX-850 | £309 |
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| LQ-1010 | £349 | DFX-5000 | £1179 |
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| LQ-1170 | £559 | GQ-850 | £479 |
| LQ-2550 colour | £739 | SQ-2550 | £679 |

**Hewlett Packard**

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|---|---|
| Thinkjet | £315 |
| Quietjet | £349 |
| Quietjet+ | £419 |
| Deskjet 500 | £325 |
| Deskjet 500C colour | £525 |
| Deskwriter (Mac) | £379 |
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# Panasonic
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| Brother HL4 Postscript | £1215 |
| Brother HL8E | £999 |
| Epson EPL7100 | £745 |
| Epson EPL7500PS | £1289 |
| Canon LBP4 | £699 |
| Canon Mk3 | £1099 |
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| HP111 | £1099 |
| HP11D | £1725 |
| Panasonic 4420 | £625 |
| Panasonic 4450i | £1015 |
| Panasonic 4455 | £1530 |
| StarCP4 | £739 |
| StarLP-4PS | £919 |
| StarLP8-111 | £1045 |
| StarLP8-111PS | £1259 |

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| Appoint Thumbelina | New £69 |
| Genius 4500 + OCR | £99 |
| Genius F303 | £40 |
| Genius GM6000 | £30 |
| Genius F302 | £35 |
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| Logitech Trackman | £79 |
| Logitech Scanman 32 | £99 |
| Logitech Scanman 256 | £169 |
| Microsoft Ballpoint mouse | £89 |
| Microsoft mouse + Windows 3 | £110 |
| Microsoft mouse, menus + paintbrush | £89 |

**Modems**

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|---|---|
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| Ad lib soundcards | £99 |
| Soundblaster | £129 |
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|---|---|
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| Sage Payroll II | £129 |
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| Microsoft word 5.5 | £269 |
| Protext V5 | £109 |

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| PC Paintbrush IV Plus | £115 |
| PC Deluxe Paint II Enhanced | £169 |
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| Cornerstone Database | £30 |
| Data Manager Professional | £25 |
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| Desk Press | £174 |
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| Typografica Standard Collection | £69 |
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| Davrelle | £85 |
| Deluxe Paint Animation | £75 |
| Drafix CAD Quickstart | £89 |
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| Draw Perfect | £269 |
| Gem Artline | £365 |
| Gem Draw Plus (for all PCs) | £165 |
| Gem Graph (for all PCs) | £165 |
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| PC Deluxe Paint II Enhanced | £70 |
| Publisher Paint V2 | £249 |
| Recognita Plus | £435 |
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| SunScan | £245 |
| TLG Plus | £125 |
| Turbocad V1.8 | £109 |
| VP Graphics | £65 |

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| Microsoft Works V2 | £99 |
| Migent Ability Plus | £130 |
| Mini Office Personal | £20 |
| Mini Office Professional | £28 |
| Sage 4 in 1 Business | £109 |

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| Sage Sterling Accountant | £189 |
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| Data Manager Professional | £48 |
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| Gem Diary (Amstrad) | £20 |
| Gem Draw (Amstrad) | £49 |
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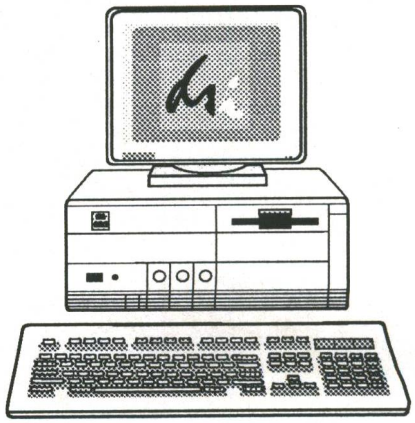
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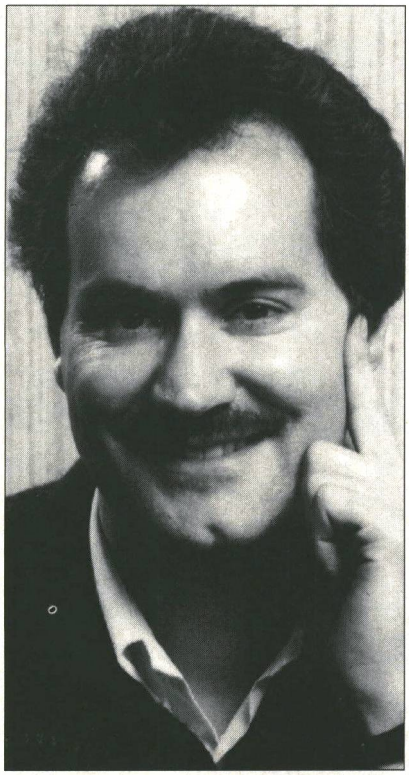
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# Endangered species

*Roland Waddilove reflects on the changing role of the computer user*

IT is interesting to see how our interaction and relationship with personal computers has changed over the past 10 to 15 years. Back in the late '70s and early '80s most users of desktop computers were enthusiasts, hobbyists DIYers and electronics experts. They had to be because in those days you didn't just buy off-the-shelf boxes and plug them in as we do today, you often had to build the machines themselves before they could be used.

You had to be dedicated to computers – to live, breathe, eat and sleep computers. People's minds were filled with bits and bytes, rom and ram, memory chips and microprocessors. Can anyone remember Sinclair's ZX80 and ZX81? They came as kits and you had to build them yourself!

It wasn't long before computers became available ready-built and ready to go, but that didn't stop the enthusiasts and hobbyists from taking off the lid and poking around inside to see what made it tick. In the business world machines like the IBM PC came with several expansion sockets that could be used to add various bolt-on go-faster peripherals, and home computers often had an expansion connector that electronics engineers could use to plug in various home made gadgets.

Every waking hour revolved around trying to make their computers perform fascinating feats of computation in various obscure languages and dialects, such as working out all the prime numbers up to one million, or displaying the Mandlebrot set. Those were the days when computers were considered to be wonderful machines that could do almost anything, yet the paradox is that we never seemed to put them to any useful task.

All this encouraged the enthusiasts, hobbyists and amateur electronics engineers and whizz kids. Where are they all now? No doubt many enthusiasts and home users went on to become IT managers in the companies in which they were employed. Often the responsibility of computerising a department in a business is handed over to these people because no-one else can make head nor tail of the technology.

The problem now is that these people are a dying breed. Today we buy a machine off the shelf at a dealer or have one delivered to our door through the direct mail order channel. We plug it in and install our wordprocessors, databases and spreadsheets and start using them within minutes.

Who cares what goes on underneath the lid? We don't need to know about bits and bytes, counting in hexadecimal and assembly language opcodes – or how the ram chips are connected to the microprocessor, or which signals come out of which pins on the expansion connectors. We just plug it in and go. And if it fails then we simply pick up the telephone and dial the number on the maintenance contract supplied with the machine. An engineer is round to fix it next day.

At one time computer literate meant understanding how computers worked at the machine level. Now it is taken to mean how to use software to make computers perform some useful work.

The enthusiast and hobbyist are a dying breed, although I don't think they'll become totally extinct. Computer users of the '90s are more concerned about what useful tasks the machine can do for them, not how they work.

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# Zeroing in on defects

*Ged Start argues that no level of hardware faults is acceptable and suppliers should have a zero defect policy in force*

THE nature of my work exposes me to vast quantities of what should be top quality equipment. Unfortunately, the reality of the situation is vastly different. The amount of hardware that we at ***PC Today*** receive for review is phenomenal, but the problem is that the failure rate frequently reaches epidemic proportions.

Right or wrong, all members of the press expect to be buttered up and to only ever be shown the best wares. In many cases I believe that products dispatched to magazines undergo far more rigorous inspection than those being sent out to the unsuspecting public. When the failure rate of review equipment starts to exceed 40 per cent I start to get very concerned about the standard of products reaching the market.

Recently, over a period of four weeks, my colleagues and I had the task of examining a range of 33MHz 80486 machines from a selection of well known and respected manufacturers and suppliers. Of the first eight machines we looked at no fewer than five had defects serious enough to be reported back to the suppliers.

Three had to be replaced entirely, one had to have an engineer out to fix it and the other was missing a disk drive – in this case a problem we could work round.

One of the replacement machines was sent brand new from the suppliers sealed in a mass of expensive packaging. It didn't work either. Many computer companies may be feeling the pinch from the ongoing recession and are having to watch their overheads, even to the point of cutting corners. However, the one place that no company can afford to cut corners is in their quality control department.

Faulty products hurt everyone, especially the company that supplied them. Having one standard of machine for review by the magazines and another for customers is also bad practice as it can result in misleading reports being published. The manufacturers and suppliers involved in such deliberate acts eventually fall foul of a vicious boomerang effect that can cause them irreparable harm.

Until all companies in the UK tighten up their quality control this situation will not improve. British Standards' BS5750 certification was a step in the right direction, but in practice it involves far too much bureaucracy. The best way forward is a zero defect policy. Management of computer companies should not be prepared to have acceptable defect levels, because no fault is acceptable.

The zero defect principle is not new, but it does inspire varying degrees of panic in production staff. This reaction is uncalled for as it only demonstrates an ignorance of the subject and the benefits that can be derived from it.

If a member of staff produces a piece of substandard work, it should be redone until it is right. This should never be presented as a punishment, merely a natural part of doing the job.

Initially production can fall, but as the number of products being returned for repair or replacement will fall drastically, any damage to the company is limited. With a proper quality control approach everybody benefits: The company, their staff – after all higher profits means higher wages – and the customers who can buy their computers with confidence.

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# What's PC TODAY new?

Edited by Matthew McGrath

# New view on Windows

MICROSOFT have sent out the final beta release of Windows 3.1. This pre-empts the product's formal launch in May this year. Responding to criticisms from ***PC Today*** among others, Microsoft have revamped sections of the product to include a large selection of new bitmaps for wallpaper.

The most immediate effect is the new startup screen, and the desktop now incorporates a huge selection of new icons for common Dos and Windows applications.

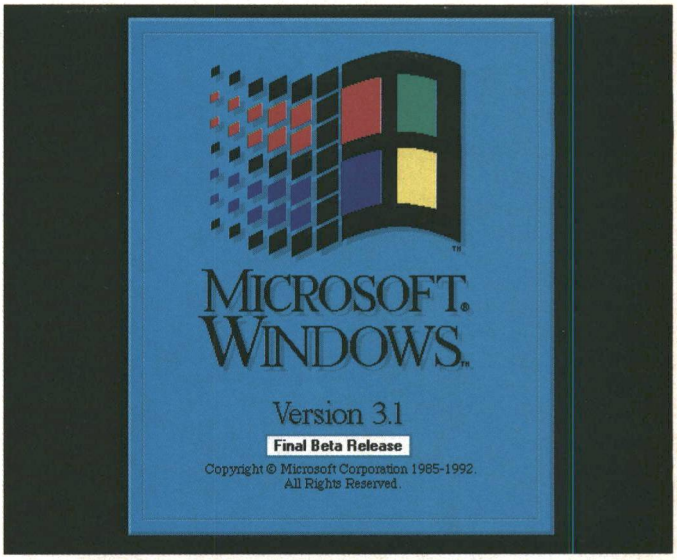
The product also embodies XGA support within Setup and has finally included an improved disk cache, SMARTDRV. One of the more immediately gripping features is the sound card support which now encompasses all the industry standards and the Apple style event driven noises.

There is also a recording facility so you can customise these effects.

Microsoft are also rumoured to be bringing out version 5.01 of Dos which will incorporate Stacker, a file compression utility.

This is seen as a direct response to Digital Research who have bundled Superstor with DR Dos 6.0.

Digital Research have also announced a free system upgrade for those suffering what DR term "a minor compatibility problem" using its network drivers and Windows.



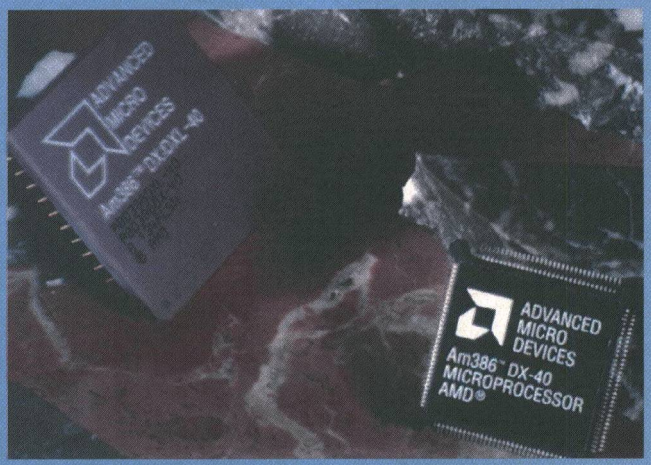

***Windows 3.1 with its new look opening screen***

# AMD SHOW THEIR 486 CHIP

WITH figures from Intel showing that sales of 486-based PCs will increase substantially in the course of this year, the launch of a new 486 family of chips by arch rivals AMD could hardly have come at a better time.

Claiming to offer compatibility with existing standards, W.J. Sanders III, chairman and chief executive of AMD said: "AMD's entry into the 486 market will give aggressive PC manufacturers an opportunity to offer their customers superior value and performance and assure that PC manufacturers are not totally dependant upon a competitor for a key component".

The new family contains the 25, 33 and 50 MHz chips and will also offer a 25MHz version of the 486SX chips. The chips will be plug-in replacements for the 486 microprocessors currently used in PCs.




***The new 386 chip family from AMD***

The processor also claims to enhance the industry standard with a fully static design that reduces power consumption and offers 3-volt operation.

Two new versions of the 386 processor were also announced by the company, comprising the new 33MHz version of the 386SX/SXL device and a new 40MHz version of the 386DX/DXL processor in a low-cost plastic package.

# Tandon claim dominance in the 486 PC marketplace

A RECENT report from Romtec suggests that Tandon are the leading players in the 486 PC field. Although their overall share of the PC market is 5.95 per cent the report states that Tandon have 21.89 per cent of the 80486 market which puts them in front of IBM.

In the 386SX market Tandon claim third place behind IBM and Compaq with a 7.96 per cent share of the market. According to Ed Sherman, managing director of the company: "Tandon have continued to increase in the 486 in site of some of the toughest market conditions the industry has ever known".

# What's new? PC TODAY

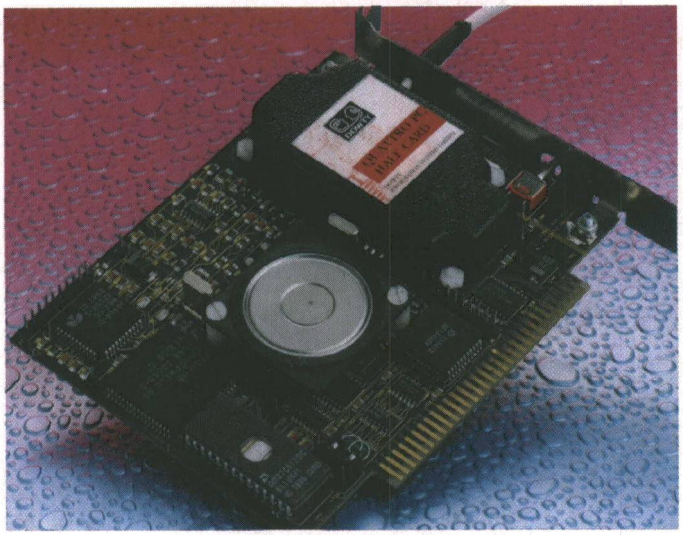
**WORDPERFECT (0932 850505) have stepped up the pace in the competitive trade up market by allowing users to trade up from their existing word processing software to an equivalent WordPerfect product. You can now trade up to WordPerfect 5.1 for Dos or Windows for only £99. LetterPerfect is also available on the trade up scheme at £69. The offer ends March 31.**

***KODAK (0442 61122) have announced the launch of a unique warranty service for users of their Diconix range of notebook inkjet printers. For all purchases from February any faulty printer under warranty is guaranteed to be replaced by courier within 24 hours anywhere in the UK.***

**MICROWAY (081-541 5466) have announced their new 486 workstation series of powerful customised systems designed to cater for intensive applications. Based upon a 486 powered EISA motherboard the package comes complete with on-site maintenance, comprehensive technical support and a one year warranty. Prices start from £1,295.**

***IMPACTRON (081 390 8522) have launched a product of interest to travelling executives who use notebooks or laptop PCs. The international travel kit is a set of adaptors that allow a PC, fitted with a modem or fax modem to be connected quickly and reliably into almost any phone network in the world. The kit sells for £95.***

**APRICOT (021-717 7171) claim to have set a new price standard for the 486 PC which will provide savings of up to 40 per cent on current Apricot RRPs. The new XEN-LS 486SX with 4Mb of Ram and a 50Mb hard disk is now priced at £1,595. The products are being aimed directly at network users who can have integrated ethernet versions for an additional £75.**



***The Quattro PC half card fax from Dowty***

## UK's first zero powered modem

ANDEST (0908 263300) have announced what they claim is the UK's first modem that takes its power from the telephone line. It will benefit portable PC users who use a lot of batteries with conventional modems.

The product has aroused a great deal of interest and the company have also announced the release of a Quad modem with V.42 bis data compression, a Quad fax/modem with the addition of group III send and receive fax and a Quin fax which adds V.32 data transmission to the Quad fax specification.

Managing director of Andest, Tony Sellers claims the new external products will bring portable modems below the price of their deskbound equivalents. Details of pricing and product have not yet been released.

Other developments in the communications world include the release by Dowty (0635 33009) of the Quattro PC half card internal modem with DS-Fax software. This card allows for faxing from the PC at speeds from 2400 to 9600 bps and operates on the group III fax standard. The package comes with a list price of £595 and includes fax and communications software.

## Piracy is costing $4.5 billion

ACCORDING to the Software Publishers Association, in 1990 there was a loss through piracy in Western Europe of $4.46 billion. The research, based on data gathered by the SPA and the International Data Corporation, compares results from studies of the average number of software programs utilised by computer users.

The report is similar to one issued by the SPA in August 1991 which claimed a $2.4 billion piracy loss in the USA in 1990.

The report confirms anecdotal evidence that businesses are using much more software than they are buying.

In terms of piracy growth, the problem continues to accelerate when compared to the 1988 figure of $2.81 billion.

One interesting aspect of the survey broke down the problem into regions. The variations were quite extreme.

The percentage of legal software in Germany and Austria was 24 per cent while in the UK and Ireland the figure was 33 per cent.

The extreme was Iberia where a paltry 10 per cent of software was deemed legal. Clearly there is along way to go for the anti-piracy lobby.

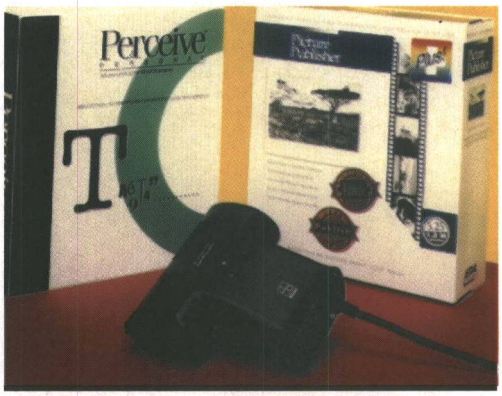
## New standard for hand scanners

EXCLUSIVELY previewed to ***PC Today***, the new colour hand scanner, ColorArtist, from Mustek (0908 690880) is expected to set new standards for the sector. The company, formerly known as Marstek, are bundling the scanner with the top image enhancing software package, Picture Publisher.

The scanner features a head slightly over four inches in width. The 18-bit ColorArtist can scan colour photographs in up to 262,144 colours or black and white photographs with 64 grey scales.

The package also attempts to set a new standard in the cost of scanning with a retail price of £399 for an introductory period.

The ColorArtist may be the scanner that convinces those who deride hand scanning as unprofessional to change their views. At present the company are looking for distribution partners.




***Mustek are bundling Picture Publisher with ColorArtist***




# A WORD
## to the wise is enough

## ROYALE ANNOUNCEMENT

Royale Computers offer all the usual benefits of superior PC solutions — speed, power, reliability, excellent standards of manufacture, great backup and service, unassailable price.
This Royale collection has a jewel in its crown; the extraordinarily fast removeable hard disk drive. So with Royale you get the bonuses of removable media; different applications on each disk, data portability, shorter down times (if any), tremendous speed due to the option of the IDE Cache Controller (access time of 0.30ms).

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- 32 bit 80386dx processor running at 33MHz, 64k write back Cache with socket for 387dx co-processor.
- High quality 124Mb hard disk drive, with fast access time, IDE interface, removeable media.
- 4MB ram as standard, upgrade to 32MB on motherboard.

Superb entry level full 386dx, with leading edge technology, providing you the user with probably the best 386dx available today.

**£1245 +VAT**

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- 32 bit 80386dx processor running at 40MHz.
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# What's PC TODAY new?

*MJN (0242 262262) have announced increased specifications and reduced prices across the range of products. Their PCs now come with a minimum hard disk of 85Mb. Pricing examples now include the 33MHz 386 cache system at £1,399 which includes 4Mb of ram and Super VGA non-interlaced colour monitor.*

**SCHOOL SOFTWARE (Eire 061-415399) have released the fourth title in their Leisureland series of educational software entitled The Wind in the Willows. All the adventures in this series are based on traditional fairytales and the developers claim that this is a new style of adventure format with the child making all the decisions.**

*BORLAND (0734 320022) have announced a special upgrade deal for all users of competitive C language products. They can now buy Borland C++ and Application Frameworks 3.0 for only £189.95. The offer runs until the end of March and is only available through Borland's three authorised language dealers.*

**TECNOPLUS (0604 768711) have made a name for themselves in the PC peripheral market and have enhanced their line of accessories with new products such as a midi connector and a CDD461 CD-rom. The Tecnoplus Professional package was launched as a means of turning the basic PC into a high-tech business and entertainment computer system.**

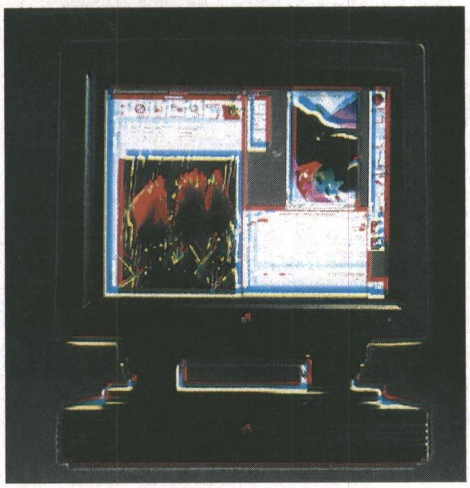
**Emphasising their accessory range, Tecnoplus say they can provide not only high quality reliable products, but they also have the range of entertainment software to match.**

*IIT (0628 890984) have announced a 33MHz version of their advanced 3C87SX math co-processor for the new 33MHz systems. It has been designed to partner and boost the performance of the new 33MHz 386X CPUs. They claim that this easy-to-install processor typically offers a three times performance improvement for Lotus 1-2-3 and a five times improvement for screen redraws in Autosketch.*

# NeXT target the PC market

WHILE much attention of late has focused on the decision by NeXT to ship their operating system for 486 PCs, the company have confirmed to ***PC Today*** that they will now be repositioning their hardware to specifically compete with 486 manufacturers. NeXT aim to make use of data showing that price and performance wise their products are the best. But by configuring their operating system to operate with 486 PCs is an acknowledgement of the dominance of the PC in the marketplace.

More than 20 companies are now converting their NeXT programs including Lotus, WordPerfect and Adobe. NeXTStep on the 486 will however be very processor intensive needing 8-16Mb of memory and 120Mb of hard disk space. It will be delivered on CD-Rom and will cost £695. According to a spokesman for the company: "NeXTStep has had no bad reviews, but the large corporate houses were reluctant to put mission critical data on a single sourced product. Basically it's not been getting into enough hands".



***NeXT go on the offensive against the PC***

For a long time NeXT stood out as manufacturers of their own systems and operating system. "But it's easy to be a leader in your own market", said the spokesman. But they have recently faced increased competition from people like Digital.

With the announcement of NeXTStep for the 486, NeXT are in danger of being seen as a software only company but their efforts to sustain their hardware shows they are not yet prepared to accept that title yet.

# Jumping the gun on NT

TI'KO COMPUTER CORPORATION

***Ti'ko aim for the NT market***

**TI'KO (0506 857666) are plainly ahead of the market with the launch of their new 486 Superboard. Aiming specifically at the Windows NT market while most other manufacturers are still dealing with Windows 3.1, the company's new motherboard allows CPUs to be upgraded from 486SX to 486DX 50MHz.**

**It also features flash cache memory, Weitek co-processor support and a new 32-bit local bus superslot connected directly to the CPU. The superslot is occupied by a 32-bit graphics card running at the speed of the motherboard processor.**

**The card is one of the fastest Windows and CAD accelerators on the market. This ensures that the hardware will still be up to date when NT is released towards the end of this year.**

**Aiming the superboard system as the entry level for NT, the 486SX and DX models up to 50MHz are available for a starting price of £1,399 for a fully configured system including hard disk.**

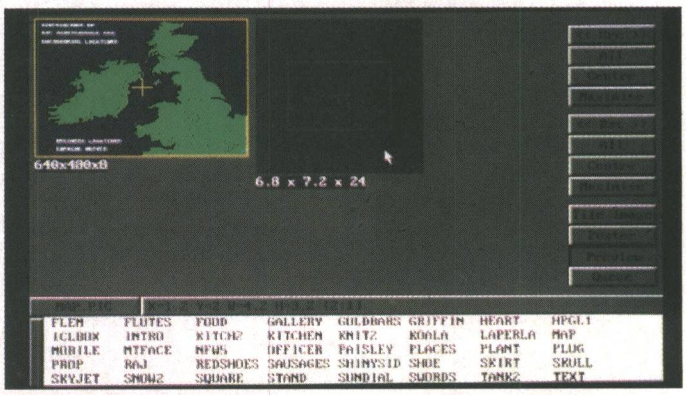
**The Ti'ko 433 486 PC, featured in last month's comparative review was priced at £1,999, but Ti'ko lowered the price to £1,499 as the magazine went to press.**

# Creating a better image

CAMEO Image from Noble Campion (081-951 5656) has been upgraded to include JPEG, CD-I and PostScript support.

It offers transfer of images from one graphics program to another and removes problems of cross support caused by the increasing number of filetypes on the market.

The new release supports many new file formats including BMP and the more exotic Targa and TIFF, and retails at £250. Expansion packs range in cost from £99 to £150.




***The new release of Cameo Image supports PostScript files***

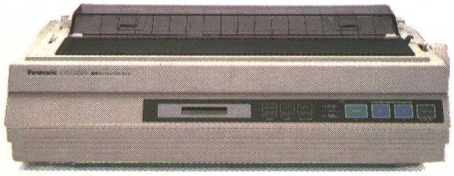
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# Our new QuietPrinter is so quiet, you might want a second opinion.

*To be honest, it's so quiet we didn't quite believe it ourselves; which is why we had it tested against strict independent ECMA standards.*

*But it's true: due to its revolutionary new diamond shaped 24-pin printhead, our KX-P2624 is quieter than many ink-jet and laser printers*. And the beauty of it is that you can have this blissful serenity and super print quality without sacrificing the speed you normally associate with matrix printers.*



*Quite the opposite, in fact.*

*With, for example, eleven print styles, including Super Letter Quality, a top speed of 300 cps in draft mode (100 cps LQ), plus superb paper handling, the KX-P2624 is ideal for any office environment. And because it's based on impact technology, you can still print on all formats of multi-part stationery. With all this, and more, you could be forgiven for finding it hard to believe that the running costs of the KX-P2624 are less than half of a typical laser or ink-jet printer. But, again, it's a fact.*

*All in all, the QuietPrinter is a real breakthrough: a matrix printer which, while it does its thing, lets you get on with yours. To find out more, call us free on 0800 444220.*

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**ECMA 74 compliant front bystander tests returned the KX-P2624 at 43.2dBA in SLQ Super Quiet mode.*

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# What's PC TODAY new?

# New approaches to price war

IN the midst of the continuing price war, manufacturers are seeking new ways of distinguishing their products. Two recent innovations come from Fujitsu and Dell

Dell(0344 860456) have taken the approach of shipping their PCs supplied with applications software as standard. Among the products that will be included are Lotus 1-2-3 and WordPerfect.

According to Dell, this factory installation of the software will save users time and money. WordPerfect 5.1 for Dos will be available for £249 which is £150 less than the normal retail price.

Dell explain that the service will also improve compatibility as the pre-loading and testing of the software will iron out any difficulties that may arise before the PC is shipped.

Fujitsu (081-573 4444) have announced that they are to take a similar line by increasing the specification of their components by over 100 percent. They have increased the hard disk capacity on their 286 and 386SX machines from 45Mb to 105Mb, upgraded the Ram on their 386DX machine from 2 to 4Mb and increased the hard disk capacity from 105 to 180Mb.

While prices remain unchanged Fujitsu are claiming that the increase in hard disk specification is due to the increased space requirements of Windows 3.0 and the increased demand for networking was cited as the reason for upgrading the memory.




***Instead of cutting prices Fujitsu are boosting the specifications of their PCs***

## Compaq and Novell seal friendship

CALLING their joint declaration the Master Business Agreement, Novell and Compaq have outlined new areas of co-operation.

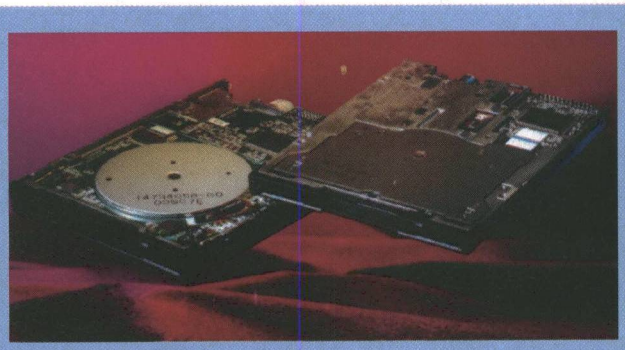
They have committed to develop new products jointly, aim to simplify the management and control of PC networks and raise the level of network dependability.

New president of Compaq, Eckhard Pfeiffer said that the company are committed to strengthening their leading position in the PC networking market.

The agreement would allow both companies to: "mutually address customers' increased demands for new products, service, support and systems integration".

Ray Noorda of Novell said he was excited about the new level of co-operation because together the companies would advance the industry.

The co-operation agreement marries two of the biggest players in computing and carries the stipulation that they will work together in the joint development, marketing and support of network management products.

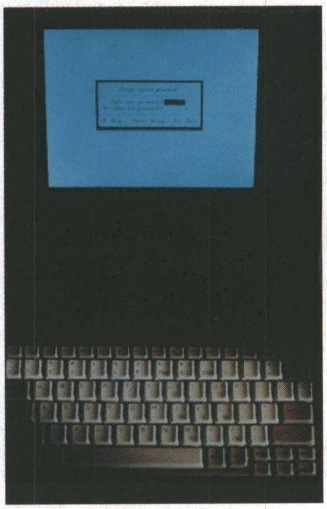


## Smaller drives in fashion

TEKDATA (0782 577677) are now distributing the TEAC FD-05 which they claim is the world's first half inch high 3.5in drive. Housed in a compact diecast body it provides 1-2Mb capacity and is being aimed at lightweight units such as notebook PCs. The drive claims a low power consumption of 1.35W and operates on a 5V DC battery.

Meanwhile another company with small drives on their minds are Mitsumi (0276 29029) with the launch of the D359F 3.5in compact drive – which claims to be the thinnest drive on the market.

It is also just a half inch in height and aimed at portable computer manufacturers. Available in 1 or 2Mb read/write configurations it has similar power consumption of 1.1W at operating state and uses a a 5 volt power supply.



***A full working day is the promise of the new Aria notebook***

## Eight-hour Aria

**ARIA (081-993 1475) have launched a high performance notebook that claims an eight-hour battery life. Called the 386SL-20 it comes with a 2.5in 60Mb hard drive as standard and 2Mb of on board ram and features a 9in super twist LCD display.**

**Weighing in at 5.9lbs the machine is built around the Intel 386SL chip and Aria are hoping that the extra battery life will enhance the appeal of the notebook to the travelling professional.**

# Need more room on your hard disk?

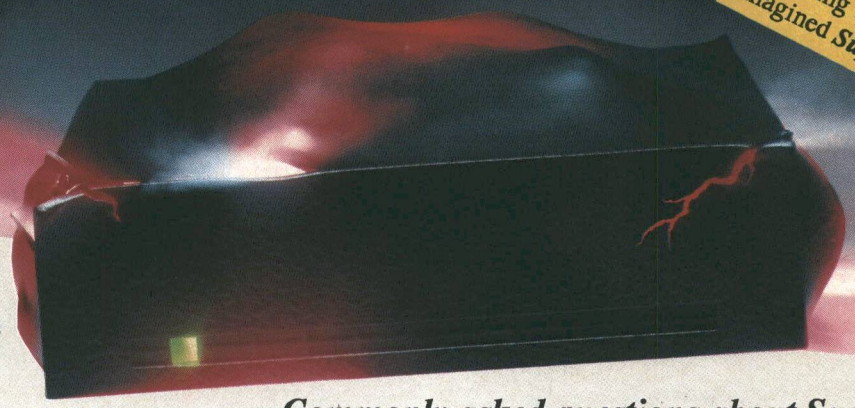
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## *SuperStor*

**Dramatically increases drive capacity up to 300% or even more.**

*Totally transparent.

*Compatible with all popular application programs, including Windows.

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*Breaks the 32Mb limit on DOS 3.x partitions.

*Performance enhancing defragmentation and caching programs included FREE.

*Can reduce the number of flopppies needed to backup by 50%.

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*Works equally well on new or full hard disks.

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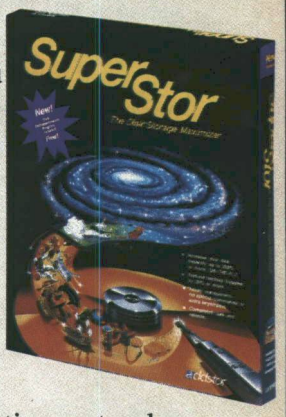
## *Commonly asked questions about SuperStor*

***How does SuperStor work?***
SuperStor increases your disk capacity: 1) By using the latest on-the-fly data algorithms to remove redundancy from your data and reduce the space required for storage. 2) SuperStor also uses a sophisticated sector by sector scheme that enables DOS to use your disk space more efficiently.

***Do I have to use my computer any differently than I did before installing SuperStor?***
No, SuperStor is totally transparent, you can use your system exactly like you did before, no extra keystrokes or special instructions are required.

***Is SuperStor compatible with my operating system and computer?***
SuperStor 1.4 is compatible with MS and PC DOS versions 3.x, 4.x and 5.x, DR DOS 5.0 and 6.0, as well as Compaq 3.31. It will operate on any PC/XT/AT,PS/2 or compatible.

***Is SuperStor safe?***
In fact it's that safe that Digital Research now include the basic elements as standard with DR DOS 6.0. However, if you already have DR DOS 6.0, you can upgrade to the fully blown version for £49.




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This is the first advertisement placed by Arkel in a computer magazine for two years. Our competitors said we were crazy to stop advertising and that we would never survive. However, during this period we have increased our sales, whilst many of our competitors have ceased trading. This leads to the question " How has Arkel bucked the trend and increased sales during the recession?" The answer is simple. Quality. Quality of equipment, quality of pre-sales advice, quality of service and quality of after sales support.




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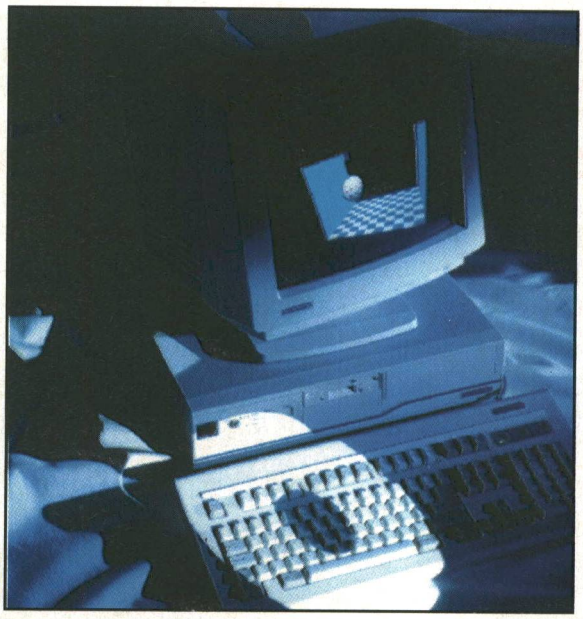
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# What's new?

# Opus go under £600 for SX



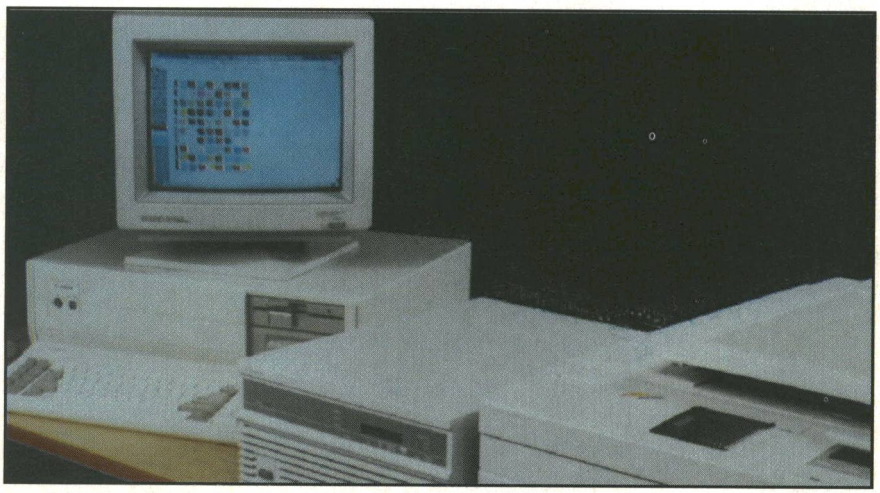
OPUS Technology (0293 821444) have broken the £600 price barrier for a 386SX PC. The Panther SX machine will now sell at £599 and features a 386SX processor and 1Mb of ram, expandable to 8Mb.

The hard disk is 40Mb, manufactured by IBM and with a 17ms access time. The monitor is a VGA colour 256k video ram. The small footprint casing houses three 16-bit expansion slots.

Opus are promising more price cuts all under the banner of providing more value for less money. However, they insist that the quality of the product and the support offered will not be downgraded. The reason that Opus are able to sell such a highly specified machine for so little is that they have recently re-organised their distribution channel so that they are now distributing direct to dealers.

A spokesman for Opus said that they would now deal direct with larger corporate clients as the services provided by traditional resellers can now be supplied in-house.

Competition in the marketplace is as keen as ever according to Opus and future price cuts can not be ruled out.



***Copying and printing come together in the CLC300***

# Colour combination

THE growing demands of business for colour capabilities in printing are among the reasons cited by European Printing Systems (0329 221121) for the launch of their combined colour laser printer and copier.

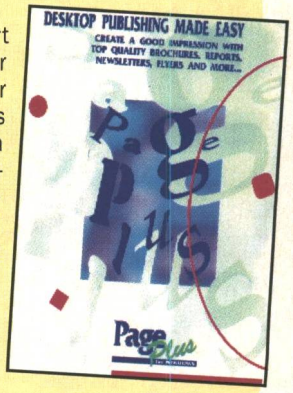
Called the EPS CLC300 the machine has been developed in conjunction with Canon and acts as both a high resolution PostScript printer and a colour laser copier. Running costs can be kept to a minimum because the machine prints on plain paper. The estimated cost of printing a colour A4 sheet is 5p. It can print in both A3 and A4 formats and has a 400 dots per inch resolution. The package is principally aimed at the office environment and at high end PC users or offices with PC networks.

The kind of work that can be completed on the CLC300 include acting as a proofing system for colour suitability. The retail price of the machine is £19,995.

# PC Today freebies

## PagePlus v1.11

***Desktop publishing on a budget***




If you create any sort of book, leaflet or newsletter with or without pictures, it is much easier with a good desktop publishing package. PagePlus is the very latest in low-cost, yet high-quality DTP for Windows from Serif. It lets you join text and graphics on a pasteboard, then transfer it to the page when you are satisfied with the results.

PagePlus offers excellent control of text formatting features. Importing graphics couldn't be easier as the software supports most standard graphics file formats including CGM, EPS, PCX and TIF. The picture can then be resized once imported, an unusual, but useful feature with DTP packages.

**● Serif reckon they have a superb package and are offering 10 copies worth £119 absolutely free to *PC Today* readers so you can try it yourself. In addition to this they have pledged that 50 runners-up will receive a consolation prize. If you'd like a copy, send your name and address by post – not fax – to: Serif Offer, PC Today, Europa House, Adlington Park, Macclesfield SK10 4NP to arrive no later than March 31.**

## PC-Kwik Power Pak

***Highly integrated utilities***

Multisoft's PC-Kwik Power Pak is an integrated package of utilities which work together to enhance the overall performance of PCs by up to nine times. Advanced cacheing is used to accelerate the slowest parts of a system, such as the disk drives, monitor, keyboard, cursor and printing operations.

PC Kwik Power Pak also features dynamic memory lending, allowing instant extra ram for hungry applications. Other facilities include Power Write, which greatly accelerates the process of writing to disk, and a graphical display that shows measurements of cache activity while Windows is running.

**● Multisoft and their UK representatives, Opensoft, are offering 15 *PC Today* readers the chance to receive a free copy of PC-Kwik Power Pak worth £79. Write, including your name and address – no faxes please – by March 31 to: PC-Kwik Power Pak Offer, PC Today, Europa House, Adlington Park, Macclesfield SK10 4NP.**

# AMAZING DTP FOR WINDOWS 3!

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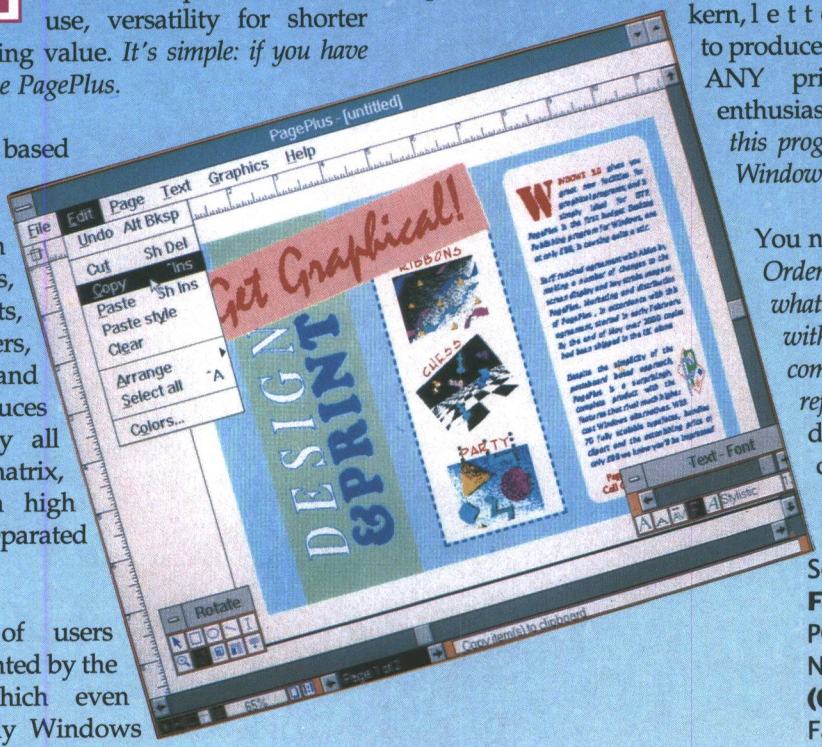
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"Looks and feels rather like PageMaker..."
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**£119***

**PagePlus for Windows**, the great Windows 3 desktop publisher from Serif, is winning universal praise from users and reviewers alike for impressive ease of use, versatility for shorter publications, and astonishing value. *It's simple: if you have Windows 3.0 you should have PagePlus.*

PagePlus is pasteboard based and allows *full rotation of text and images*, making it ideal for producing high impact materials: flyers, invites, adverts, hand-outs, brochures, short newsletters, business stationery, forms, and the like. PagePlus produces great output on virtually all printers including dot-matrix, ink-jet, and lasers. Even high resolution colour separated PostScript like this advert!




Already thousands of users worldwide are delighted by the power of PagePlus which even exceeds much more costly Windows alternatives. It's easy to see why PC Plus concluded: *"At the price, there is currently no DTP under Windows to touch it."*

From novice to expert, PagePlus fits the bill with great features, comprehensive import and export, well-pitched documentation, and friendly support. And you get over 100 clipart images, and a PANTONE® color license. *And 70 fully scalable typefaces!* Set type from 4 to 250 points (in tenths), then **expand**, condense, slant, outline, kern, l e t t e r s p a c e, and rotate to produce incredible text effects on ANY printer! PC Plus were enthusiastic: *"there's no reason why this program shouldn't become the Windows 3 DTP for general use."*

You need to see it to believe it! *Order PagePlus now, at no risk whatsoever: simply return it within 60 days if you're not completely satisfied, and we'll refund your money.* Call direct and use your credit card, or fax/mail the coupon below.

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PagePlus for WINDOWS

*Policy: PagePlus 1.2 is £119. Add P&P: £3.60 Standard (allow up to 14 days for delivery) or £7.60 Priority (same day despatch) or £11 International. *Please add VAT (17.5%) to the total for all domestic orders.* Cheques, Access/VISA/Switch Cards, and Official POs from Education and Government welcomed.
Your PC (286 or higher) must have Windows 3 and minimum 1mb RAM.

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PCT 3/92

# What's PC TODAY new?

# Toshiba target power users



***Possibly the most powerful portable around***

TOSHIBA (0932 841600) are targeting the top end of the market with the introduction of two new mains powered portables based around the Intel 486 chip.

The T6400DX runs at 33MHz and has a minimum of 4Mb of ram. It comes with a 200Mb hard disk as standard and has either a TFT colour or gas plasma display. The SX version has similar specifications except the hard disk is 120Mb. Both feature a full size expansion slot and the memory can be expanded to 20Mb.

Both models weigh 5.9lbs and there is a future option of having a CD-rom drive in place of the 3.5in drive.

Price for the SX model with gas plasma display is £3,625 and with the TFT colour at £5,750. The DX model sells for £4,450 with gas plasma display and for £6,499 for the TFT colour screen.

# Enhancing your output

NEC (081 993 8111) have launched a new laser printer that offers full PostScript level two and also offers Hewlett-Packard PCL5. Called the NEC Silentwriter S62P, it has been designed for the personal user or for the office environment where sharing is important.

According to NEC, concerns over compatibility have been removed with the inclusion of PostScript, and the printer costs £1,795.

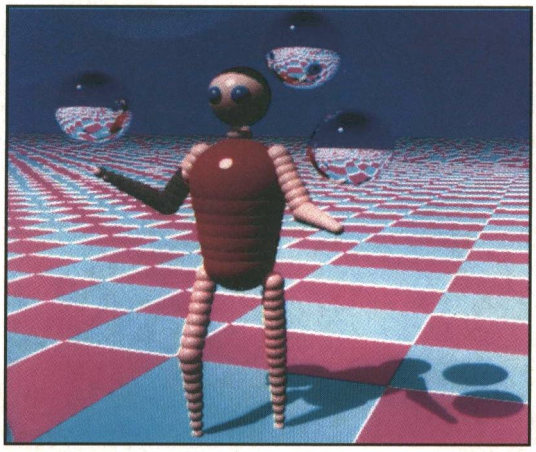
Roalan (0202 861512) have announced the release of MoreFonts from Micrologic Software. This is a type scaling solution that includes on-the-fly type scaling for all Windows applications and for WordPerfect 5.0/5.1, MS Word and MS Works in Dos.

The package also installs LaserJet softfonts for Ventura Publisher, First Publisher and others. MoreFonts provides the highest resolution fonts supported by your printer in either portrait or landscape orientation. It provides 28 scalable typefaces and works with LaserJet II, III, DeskJet, PaintJet, Canon LBP-8, LBP-4 and also works with Epson, IBM and other printers. The product retails for £125.

# Photo images on the desktop

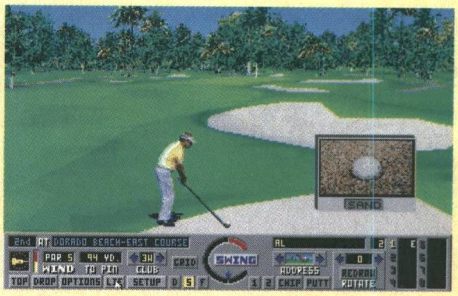
THE T-Warp graphics board produced by the National Engineering Laboratory is the latest development in photographic quality imaging. Capable of sustaining in excess of 30 million floating point calculations every second the T-Warp allows production of photo quality images in hitherto impossible times.

Raytracing runs at 10 to 20 times faster on a 386 PC. The hardware supports two operating modes which allows for up to 256 colours on screen. While software applications are currently being released, support for existing third-party applications is also planned.



***Images of this quality can be produced using the T-Warp card***

# PC TODAY freebies



## Links

***Playing around with golf***

If you are looking for the ultimate in Golf simulations look no further than Links from Access. It is distributed in the UK by US Gold and is a masterpiece in its class. Using 256-colour VGA graphics and superb shading Links offers three dimensional views. The undulating landscape superbly emulates a real course enabling the use of hills and valleys to provide a challenging game.

Links comes with one course, Torrey Pines, supplied as standard, but there are five extra courses which can be purchased separately. US Gold have generously offered the Hyatt Dorado course, based on the famous Puerto Rican beach front, to go with the original Links game.

● **We have five copies of Links worth £41.99 and Hyatt Dorado worth £17.99 to give away entirely free to five lucky *PC Today* readers. Write – no faxes please – by March 31 to: US Gold Links Offer, PC Today, Europa House, Adlington Park, Macclesfield SK10 4NP.**

## Fun School 4

***Educational games***

For the ultimate in children's education Europress Software have now produced Fun School 4. In three levels, graded by age, the Fun School characters teach, encourage and cajole children to learn the easy way, by having fun at the same time.

For the under fives Teddy teaches colours, numbers, simple addition and very early reading. The five to seven year olds are guided by Freddy the Frog through play into the world of maths, typing, sorting words alphabetically and learning new words. Seven to 11-year-olds have Sammy the Spy to encourage them in history, European monetary units, percentages, and geography. And there's a fun trivia quiz to test the child's knowledge.

● **Europress Software are offering 10 copies of Fun School 4 to *PC Today* readers. Write, including the age range preferred, to: Fun School 4 Offer, PC Today, Europa House, Adlington Park, Macclesfield SK10 4NP. Applications must arrive before March 31 by post, no faxes please.**

# MUSTEK SCANNERS

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IBM

Microsoft Windows

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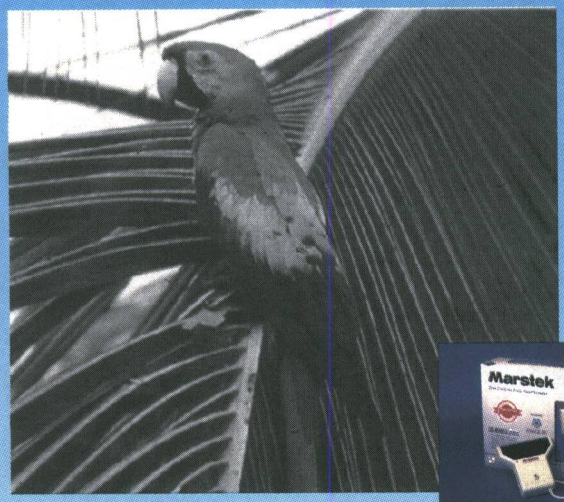
## M800W

- ★ 800 D.P.I.
- ★ Half-tone
- ★ Convert Half-tone to Gray scale image
- ★ Includes OCR application
- ★ Software bundled: Image-In

**£199**



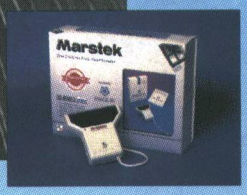


## M800G GrayArtist

- ★ 256 True Gray scale scanner
- ★ 100 D.P.I. – 800 D.P.I. half-tone scanner
- ★ Includes OCR application
- ★ Software bundled: Image-In

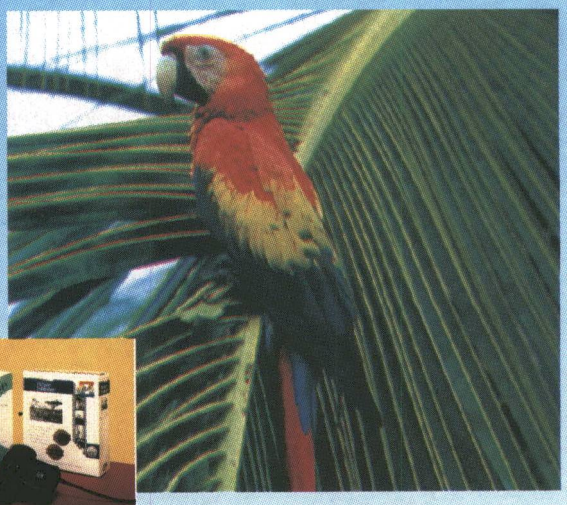
**£229**

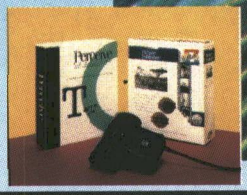



## M6000 CG ColorArtist

- ★ Colour/Gray scale/Line art scanner
- ★ 262,144/4096 Colours
- ★ True Gray scale scanning
- ★ Text for OCR application
- ★ Software bundled: Picture Publisher

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# What's PC TODAY new?

## Video down the line

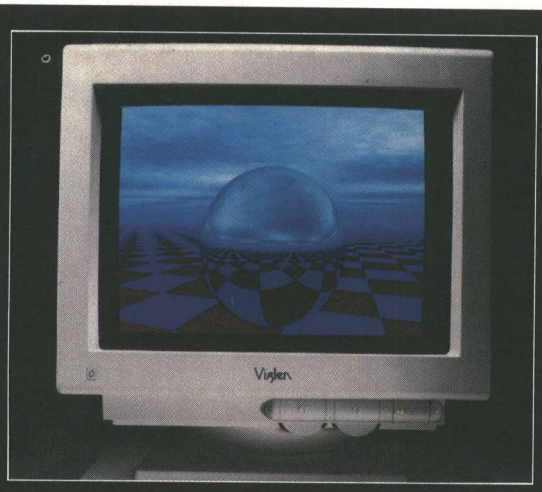
IMAGEBASE Technology (081-991 1396) have launched what they call the image transmission board solution which can upgrade your PC to send and receive high quality, colour, still video images from anywhere in the world.

The PC-Photophone plugs into any BT socket and allows interactive voice and picture communication.

It can be installed on a desktop or portable 386 or 486 and transmits NTSC and PAL images from video cameras, disk cameras and microscopes in 30-40 secs.

Hardware requirements are a 386SX or better with 4Mb of ram and a 40Mb hard drive.

It is priced at approximately £8,350.

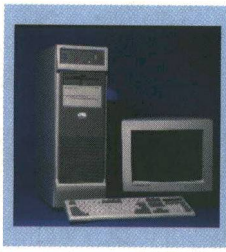



*Resistant to glare, static and emissions*

## Clean monitor

**VIGLEN (081-997 3000) have announced a new 14in Super VGA monitor selling at £338 but available as an option for £39. The monitor complies with Swedish emission standards and is antistatic and antiglare.**

**According to Viglen it has a high resolution 0.28mm dot pitch and can display up to 1024 x 768 pixels. Emissions from the monitor not only comply with Sweden's standards, the world's strictest, but also fall well under the contemplated EC directives.**



## The price is right!

IN last month's 80486 review we inadvertently gave erroneous price information regarding 486 PCs from K.T. and Silicon Valley. The K.T. 486/33 should have been listed at £1,348 and the 486-33 from Silicon Valley should have read £1,350.



## UK firm keep tabs on Europe

USING a combination of PC software and FM technology hardware, IGM (0642 850116) have developed a product that can automatically turn on/off electrical appliances and monitor the presence of same.

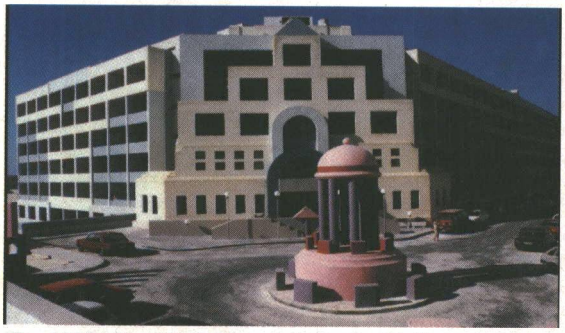
The implications of the system, called Main 77, are manifold. Primarily, say IGM, there are economic reasons for the system – it allows you to turn items on at cheap rates and for a specific time.

Secondly, the security implications of such a system means that it can be used to turn on the lights when nobody's at home.

IGM claim that the system also adds to convenience with cooking routines and different settings for different days also possible.

The system can also detect when electrical items have been unplugged from their power source. For a security point of view this offers the benefit of no rewiring as the system works down the mains wires.

The software works on any PC with Dos 2.0 or better and the initial response to the system has been encouraging with IGM taking on quite a lot of work in Malta.



*The IGM site at St.George's Park, Malta*

# PC TODAY freebies

## Technical Guide to Windows

***An informative read***

*The Technical Guide to Windows* is aimed at every Windows user and offers a full and informative range of topics. Going further than the basics is not often easily achieved. Thanks to Blackwell Scientific Publications superb Technical Guide you can aspire to heady heights previously only dreamed about.

However, you don't need to know all about Windows to want to know more. This book can transport you right from the beginners class into the world of the technical boffins.

Authors Adrian Cotterill and Patrick Coleman have included hints, tips and excellent advice on subjects rarely covered in other manuals. At only 224 pages it won't take ages to plough through, and uses simple concise phraseology to explain the practicalities of using Windows.

● **To be in with a chance of claiming a free copy worth £19.99, send your name and address by post – no faxes – to: Blackwell Scientific Publications Offer, PC Today, Europa House, Adlington Park, Macclesfield SK10 4NP arriving no later than March 31.**

## ActaeOn

***Efficient file manager***

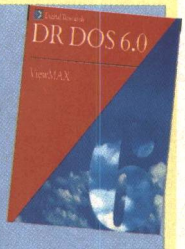
ActaeOn is a superb hard disk manager with a point and shoot interface to Dos. Although its ease of use will make it ideally suited to the new user, the regular user will find it an essential tool on a day-to-day basis.

This file manager, available as shareware, has several advantages over many of its competitors including additional features such as a built-in editor and two powerful research facilities.

ActaeOn also features a very unusual zoom feature which sorts out the files on a disk, it will then show them all together. This enables you to look for, and find, a known filename even though you may have forgotten whereabouts in the tree it was originally located.

● **ActaeOn Systems are offering 10 copies of their latest version, worth £17.95 free to *PC Today* readers who write, not fax, to: ActaeOn Offer, PC Today, Europa House, Adlington Park, Macclesfield SK10 4NP to reach us no later than March 31.**

***Due to the huge response to the DR Dos 6 Freebie offer in the January issue, Digital Research increased the number of packages available to PC Today readers from 5 to 10. The first five responses received a copy, as well as an extra five picked after the January 31 closing date.***



# Geographically speaking

THE world of desktop mapping has come to the UK with a bang. MapInfo (0332 824781) have finally launched their range of products having first established their markets in the United States and Europe.

According to Michael D. Marvin, president and chief executive officer of the company, MapInfo are the product of a lot of research and development. The company started in 1986 in upstate New York and they spent the first two years developing the product.

1988 saw the launch of the MapInfo for Dos. Since then there have been five upgrades of the product and now the company have developed the range to incorporate a Windows version and an exciting realtime version. So what's so great about these products?

According to Michael Marvin, MapInfo brings geographic information systems to the the masses: "We started from the database point of view which was somewhat unique, but the product has developed a niche across all markets by being attractively priced and easy to use".

Marvin quotes the example of a frozen softdrinks company who introduced the system. They cut the number of miles travelled by their sales force in half and doubled the number of calls made in any one day. Typical users would be the distribution and sales arms of companies or despatch and delivery organisations.

But he is quick to point out that the system is also in use with pipe laying companies, oil companies and everybody from the police and fire services to local authorities who even use the system for keeping track of fire hydrants.

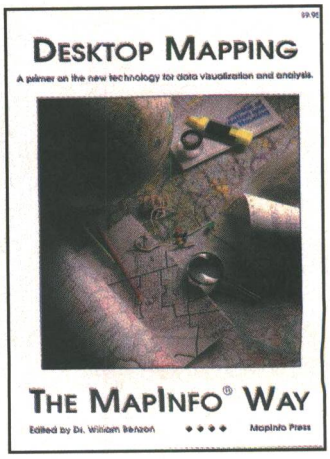
Well, if this is such a hot product, why haven't we seen it in the UK before? The data was not available says Marvin. More precisely: "There was a lack of availability of good data sources. We like to provide maps and demographics and now we are in a position to provide all the road maps, post codes and topological data".

The strong European dimension to MapInfo is certainly a strong selling point as we approach the harmonisation of European trade. Explains Jouke de Ruiter, MapInfo's European sales and marketing manager: "Transport companies making deliveries in Europe can easily use this system to obtain all necessary travel information before departing".

MapInfo for Windows is a different product from the Dos based one and the RealTime package can track moving vehicles via a link to a global positioning satellite.

The product under Windows sells for £995 and according to Michael D. Marvin the Microsoft interface is the system for the future and he expressed relief at having moved his product onto the GUI: "Two years ago I was glad we didn't do anything with OS/2".

MapInfo are in the UK in force and they are prepared to wait for the market to come to them. "We're just beginning to fight", said a confident Michael D. Marvin.




# It's a right Royale occasion

THE arrival of a new manufacturer on the already crowded PC stage is as foolish a move as it is brave. When that manufacturer decides to exclude 286 PCs from their line up then it's safe to say that the company are fully clued up on the changing world of PC sales and intend to be around for a long time.

The decision of the Micro Corporation (081-998 9896) to enter the competitive world of PC manufacturing and sales was not an easy one. However coming from the same stable as the Hardware Maintenance Corporation, Royale PCs claim to offer several advantages over their rivals.

With the maintenance company keeping a database of all reported faults the Micro Corporation know what to look out for. Secondly having a 22 per cent stake in the motherboard manufacturers eases the difficulties that many manufacturers face. There is nothing lost in the translation.

According to Mohamed Mawji, managing director of the Micro Corporation the emphasis of these machines is on quality: "We want reliability more than anything else". To emphasise the point Royale are offering a three year on-site maintenance contract with some of their 486DX PCs. Otherwise there is considerable emphasis on price. "We intend to make our money on add ons", said Mawji. As a self-financed company, the Micro Corporation doesn't feel under the pressure that many manufacturing companies do to make an instant impact on the market.

Commenting on the troubles with 486 PCs highlighted in ***PC Today***, Mohamed Mawji said that none of his machines would break down. Networking as a sector of the market is quite important to the Micro Corporation and: "we wouldn't hesitate to withdraw a machine if it was hurting a network" he says.

On the industry in general he felt the direct channel was becoming more important and this was the route his company had chosen.

He also felt that the days of the SX chip were practically over: "The DX is where it's at". He forecast another year of price cutting and said that Royale would not miss out: "as long as the quality goes with it".



***The Royale collection begins at the 386SX***

# The Best Selling Relational Database For Non-Programmers Just Got Even Better

Have you ever wondered why databases are so difficult to use? Why is it that just about everyone can use word processors and spreadsheets, but most folks need to take a programming course to get their database application up and running? We wondered that too. That's why we developed Alpha Four, the relational database for business people. And, obviously we did something right because Alpha Four is now the best selling relational database for non-programmers.

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**Single User Competitive Upgrade for £95**
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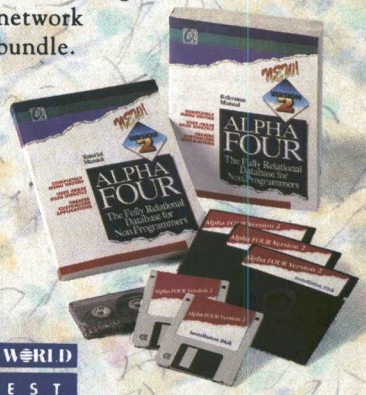
Now Alpha Four's even better.
It's still just right for business people, still as easy to use, still as powerful as any programmer's database, but now has support for Novell and NetBios networks, improved indexing and application building. We've also added a powerful new scripting capability that lets non-programmers develop the most sophisticated database solutions imaginable.

With Alpha Four Version 2, you get WYSIWYG multi-pass reports, no-nonsense mail labels, form letters with conditional logic, crosstabs, error free data entry and customised applications complete with your own menu systems, buttons, pick lists, prompts and passwords. You get all this and the ease of use of Alpha Four's menu-driven system.
Alpha Four even gives you complete control of a 64,000-colour VGA palette. Plus Alpha Four uses the same file format as dBASE so you can effortlessly share data with others who use dBASE®, Fox®, Clipper® or any .dbf compatible database.

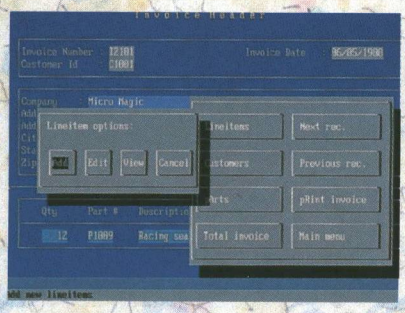
| | ALPHA FOUR | dBASE IV** | Paradox** | Q&A** |
|---|---|---|---|---|
| Relational Applications and Customised User Interfaces without Programming. | YES | NO* | NO | NO |
| Fully relational | YES | YES | YES | NO |
| Automatic data integrity and validation at the database level. | YES | NO | YES | YES |
| Directly .dbf file compatable. | YES | YES | NO | NO |
| Full network support without programming. | YES | NO* | NO | YES |

*Some programming required. **Data verified by technical support representatives at the respective companies.

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**Alpha Software**
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| TOTAL | £118.68 |

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| 386SX-16 | 645 | 715 | 810 |
| 386SX-25 | 680 | 750 | 845 |
| 386SX-25 32K Cache | 745 | 815 | 910 |
| 386DX-33 64K Cache | 865 | 935 | 1030 |
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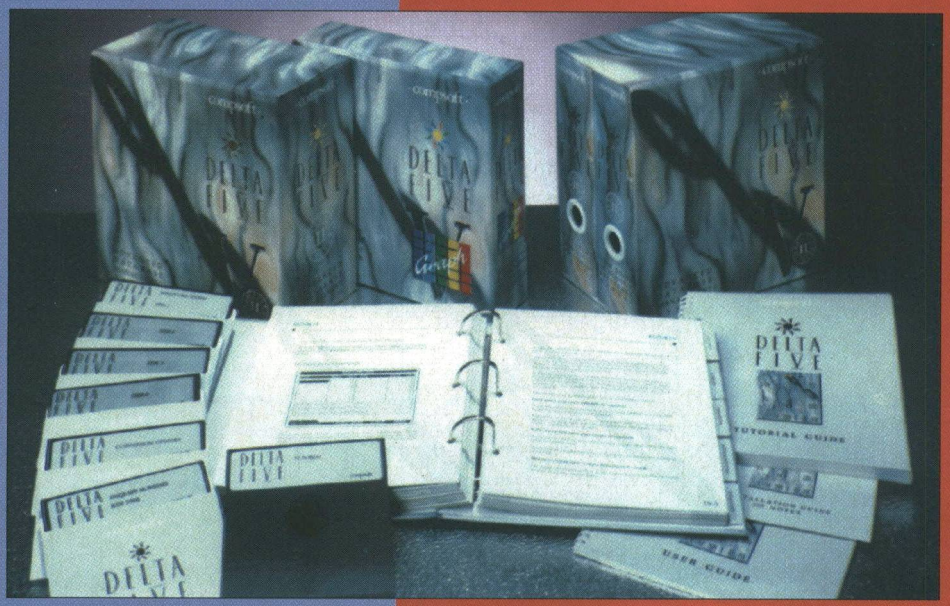
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- Only one entry per person.

## ENTRY FORM

***1. A database is:***

A. A collection of related information.
B. Computer storage area where data is kept
C. A fast form of computer data transfer

Answer: _____

***2. Compsoft, authors of Delta Five, are based in:***

A. UK B. USA C. Germany

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- LOGICAL ENTERTAINMENT Boxmania, Merlin, Aargh! (very difficult!), CI, Pegout, Logic Problem
- SUPER GAMES Shrine of Kroz, Raiders Of The Lost Mine, Word Whiz, Rogue Runner, Asteroid Rescue and Block Five
- TAKE A BREAK Bannochburn Legacy, Dwarven Lords, Swarms Hyperwar, Puzzles, Solitaire, Draughts.
- COME IN PEACE Striker, Paratrooper, Round 42, Sopwith, Dragonfly, Landmine
- STAR WARRIORS Emergency Mission, Quantoid, Kamakaze, Rescue, Rockets, Spacewar
- GOOD SPORTS Tennis, Teed Off (Golf), Sailing (Yachting), Armchair Quarterback (Football)
- SPORTING LIFE Golf, Pool, Bowl, Basketball, Volleyball
- SEEK & DESTROY Galactic Conquest, Daleks, DepthCharge, LM, Intercept, Berzerk, Defender
- SPACED OUT Saucer, Crisis, Encounter, Xo, Space
- UP AND AT'EM Flightmare, BitBat, Droids, Robotron, Spyder, Eggs & Stun
- MAZING GAMES Treasure Hunt, Amaze, Polymaze, Castle, 3-Demon, Fire, Chase
- LOST VEGAS One Arm Bandit, Roulette, Backgammon, Biorhythm, Keno and Casino
- SKILL & STRATEGY Frigate, Big Rig, Stock Market Game, Air Traffic Control Simulation
- PC-CHALLENGE PC-Chess, Othello, Entrap, Hexplode, Kalah
- JUNIOR CHALLENGE 3D Tic Tac To, Dotto, Draughts, MasterMind, Brainstorm, Gomoku
- KEEP THEM AMUSED Burger Blaster, Grime, Racer, Ninja, Caverns, Galaxy
- WIT YOUR PITS Battleships, Five-In-A-Line, Acquire, Sales Game, Rogue, Eliza
- BLOCK & TACKLE Nemon, Qix, Xonix, Blockade, Skiing, Mummies, Lazer, Beast, Tron
- SPY CATCHER Master Spy, Raid Over Auschwitz, Hostages, Brimstone, Mad Scientist
- BRAIN BOGGLERS Arionix, Concentration, Mind Expander, Hidden Words
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- TRICK MANOEUVRES (EGA) RunOff, Snake, Superfly

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# input input input input

**This is your own section of PC Today where we give you space for your own news and views, hints and tips, moans and groans – and even praise! Write to: *Input, PC Today, Europa House, Adlington Park, Macclesfield SK10 4NP.***

## Shot in the dark

*AS I am typing this letter on an Amstrad PCW 9512 you may be wondering why I'm reading **PC Today**. Perhaps I'm changing to a PC? No, I do have one, but am in a bog surrounded by fog with no person capable of hearing my cry for help.*

*I don't want to use my PC as a digital egg timer, though I appreciate others might. My requirements remain as with my PCW: To be able to create letters, print them, to locate previous work with ease, and not to be confronted by "Abort, Retry..." or the rest of the user unfriendly Dos messages.*

*Using my laptop computer is like playing a game of Russian Roulette save that I am shot in the foot every go. So when I picked the January issue of **PC Today** off the shelves in W.H. Smith, I bought it and took it home, and thought the solution could be within. Was it? Well, yes, but...*

*Ged Start's Small is Big Business on page 85 put into words all I have experienced. Whoever has the secretary who telephoned you has a treasure. The article stated that some potential users, and I include myself, do not have the expertise to solve the problems associated with running a PC nor the time to learn.*

*To date, working with a PC has resulted in dead ends. I accept I am rather computer illiterate, but I can cope with this PCW, which is a doddle compared with a PC.*

*Technology is moving onward and upward. OCR is here. Yes, admit I know the jargon, but what does it do and is it what I need? Suppose I located the software I required on a purely hit and miss basis. I know, if my present learning experience to date is a guide, I shall be not capable of using it.*

*The decision, on what PC to buy and from where, was made virtually as the article described, but not from the stores mentioned. Colleagues, associates and the cognoscente were using laptops and the Toshiba 1000LE was the most popular model.*

*More research by reading didn't knock the laptop and I became a prospective purchaser. Having test driven the PC and then loaned one by the eventual supplier, all seemed easy. Accordingly, I purchased the model with a bubble-jet printer.*

*Summer came and went and still I hadn't worked out how to use the PC on an occasional basis. What's more, I discovered that you can only ask people so many questions about your machine difficulties and remain on speaking terms.*

*However, I am able to report some progress. I have now discovered that MSdos and DR Dos are not the same software, indeed I was also informed that DR Dos was not pronounced the way I thought it was. It isn't known as Doctor Dos.*

*From inquiring and reading PC magazines I bought WordPerfect then WP Easy. Then I upgraded to LocoScript PC. I kept losing files, but I battled on. The Microsoft Word for Windows trade-in pack looked useful, but how was I to know that an EGA or VGA compatible adaptor was needed to run it? The program now languishes on the shelf.*

*Let me air some of my computer problems, which I was delighted to discover are also shared by at least one other person, without whom the article would not have been published.*

*Will an upgrade be any better or more user friendly? What programs should I use? What can I buy to enable me to learn to use a PC? Is M$dos or DR Dos more user friendly? Have I wasted both money and time?*

*Thank you **PC Today** for ventilating a topic which I for one have been, and will remain a sufferer.* – **Irvine Patnick, OBE, MP, House of Commons, London.**

***PCT:*** By constantly upgrading and swapping software you probably have wasted both money and time. Toshiba are well respected for producing good quality laptop and notebook computers, and the wordprocessor you bought first, WordPerfect, is an excellent package. The hardware is OK, the software is more than adequate, so the problems you're having are due to a lack of training.

What you need is a training course to show you how to use WordPerfect. In Info File you'll find several to choose from and any of these would provide you with the knowledge you need to make effective use of the hardware and software you already have.

Upgrading MSdos or DR Dos will not solve your problems and there's little difference in ease of use. And neither affect the ease of use of your wordprocessor.

## Cyrix compatibility

*JAMES Tye reported in your December 1991 issue that he had experienced problems running a Cyrix maths coprocessor in a Dan Technology 20MHz 386SX. We would like to make it absolutely clear that Cyrix coprocessors and Dan machines work perfectly together. There are no compatibility problems whatsoever with Dan machines.*

*The particular coprocessor chip that **PC Today** tested was returned to us with a damaged pin so we have been unable to test it. We assume that this damage occurred after testing and that the chip was seated correctly during testing.*

*A replacement chip was sent to the engineers at Dan Technology who reported that they have been unable to force crashes or errors during exhaustive tests lasting several days. The conclusion of their*

➤

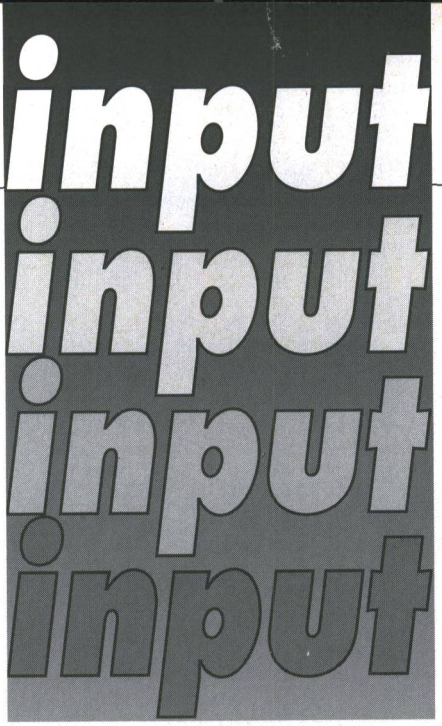
## Cipher service

*AMONG the games on last December's cover disk was Cipher by Nels Anderson. This prompted me to register not only this program, but also Mahjongg and Shooting Gallery from last year's Xmas disk. I decided to send off an order form for the deluxe versions plus some additional Mahjongg and Cipher disks, quoting a credit card number.*

*By what must have been return of post I received the complete order and a copy of the credit card transaction. I do not know about any other shareware authors, but I was pleasantly surprised by the response from Nels Anderson, I would certainly recommend his service.*

*When I received the January issue of **PC Today** the packaging was torn and the disk was missing. While it is clear what to do if I receive faulty or damaged disks it is not clear who I should contact about a missing disk.* – **C. Goddard, Stockport.**

***PCT:*** If the disk is damaged or goes missing in transit contact Europress Direct, Junction 9 Business Centre, Rosscliffe Road, Ellesmere Port, South Wirral L65 3EB.




*technical people is that the two products are 100 per cent compatible. This does not surprise us and it should not surprise your readers. Cyrix coprocessors are 100 per cent compatible, and we guarantee it.* – **Kelly Van De Hey, Cyrix International, Swindon.**

## Use, don't abuse

*IT WAS with great interest that I read Mr Jonathan Grimes' January letter entitled GUIs Waste Time. I have also been following the development of computers for some time, and have heard Mr Grimes' complaints before, except they were along the lines of: "I bet I can get a letter pad and pen out faster than you can switch on your computer, find the correct directory and type WP5." In fact, some managers in our firm strongly disapproved of engineers using wordprocessors because, they said: "engineers were wasting time doing typist's work."*

*I do agree that for some activities Dos is more efficient – I occasionally delete groups of files with DEL *.OBJ. But I also use Windows for its easy learning curve, its consistent interface (under Dos I had to remember the interface for three editors – WP5.1, Intel's text editor AEDIT and Turbo C's editor), and it's multitasking environment.*

*Yes, GUIs waste time if they are misused or used badly. But don't ban them just because of misuse – in the long run they can be more efficient, particularly if you use a lot of different programs.*

*So, to help Mr Grimes make more efficient use of Windows, I would suggest: Use Windows as your working environment – that way you don't have to boot up Windows every time you want to access a program. Put major programs (WP5, dBase) in a group that is always opened – that speeds up access to the program. Start investing in Windows-based programs – you can then gain the benefits of the Common User Access layout that Windows gives you.* – **Bill Boumphrey, Rugby.**

## Passing comment

*I READ the article Small is Big Business in the January issue, and I would like to pass comment. You mentioned the potential size of the small business computer market and a firm employing 45 people was used as an example. What about the market to really small business, or even the self employed? I feel, despite your article, that the enormity of the market is not fully appreciated, and will give you my own example.*

*I am a Market Trader, my wife and I are partners, we employ two part time workers, and I work from home. We pay taxes, run our house, a car and a van. That makes me a very small, but profitable business. So, you might ask, what could such a business want with a computer?*

*Like all the big boys, I have books to maintain, stock to control, letters to write, bank accounts to balance, bills to pay and so on. All this without a secretary (little businesses have to keep costs down). Where would I be without my trusty computer?*

*Just think of all the plumbers, roofers, electricians, barbers, joiners and market traders – hundreds of thousands of small and profitable businesses. I doubt whether there is a single one that could not benefit from a computer. And if a machine was introduced to some of these people, they would wonder how on earth they managed without one.*

*Why don't the likes of Dell (I mention this firm, hoping to receive a freebie 386 or 486 machine!) who have an excellent product (don't forget the colour monitor!) put representatives out on the road, concentrating solely on the self employed, and take the market to where it's needed most?* – **Paul Gallaher, Dewsbury.**

## Counting the cost

*I READ the Small is Big Business article in PC Today with considerable interest. It confirms what I have felt for the past couple of years while going about my business of providing support for smaller businesses.*

*While there is a considerable market to go at, the level of computer capability in even quite large businesses is still appallingly low. Products created by the computer industry are being used by these people and sold on the basis of ease of use and reduced costs resulting from better quality information.*

*Without massive support, which has to be paid for by somebody, there will always be disappointed customers whose experiences will put off their colleagues. Let us consider three typical scenarios in the sale and installation of an accounting package:*

- *Bought mail order and installed by the girlfriend's brother. The business accountant only finds out months later that there are many incorrect entries, such as credit cash with an HP repayment and debit fixed assets – and some missing! Similarly transactions are entered beyond the year-end or the period is cleared down without printouts or backups. Who pays for the time sorting it out? The cost could be 10 times that of the software.*
- *Client asks the accountant for recommendations, then buys it mail order and ignores further advice as it will have to be paid for. Same result as above.*
- *Client takes advice from chartered accountant specialising in computer systems and asks him to install it. Accountants sets up procedures, provides additional documentation and monitors progress.*

*I hardly need tell you which costs less in the long run. For every client taking the third option there are two other people with unhappy experiences – money down the drain and egg all over their faces.*

*How is the computer industry going to put things right? A very large proportion of businesses need no more equipment than an 8088 machine, a 24-pin printer, Sage Accountant and Microsoft Works to last them until the next century.*

*The more technical innovation we have, proportionately less of it is used. The majority of businesses don't need a 486 machine with Windows just to enter a few purchase invoices. Spend the money on support even if it does increase the price of the accounting software.*

*Most computer dealers are honest enough to admit that their skills fall short of the major accountancy qualifications. They must insist that contact is made with a customer's accountant so that all problems are properly addressed.*

*Computer Associates have a listing of qualified installers for their product AccPac. Unfortunately, it competes at the high end of the market and I have never heard of anyone actually using it. The principle, however, cannot be faulted.*

*The computer industry must also involve accountants so that we can easily audit the data and turn it out as a set of Companies Act-format accounts in the minimum of time. Whereas our clients used to give us Sainsbury's carrier bags full of papers, those with computers give us a disk each VAT quarter together with the bank statements.*

*Your final words are grossly over optimistic. The girlfriend's computer illiterate brother is far from extinct!* – **Tim Wood, Haslams Chartered Accountants, Warrington.**

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Even before the price reduction, Personal Computer World hailed it as an "excellent computer at an excellent price." (One can only wonder what they'd say about it now).

Perhaps you might argue there are other computers as competitively priced that look ostensibly the same.

Well, we would caution; look a little further.

Look beyond the computer to the company who built it.

Does that company, like Dell, take full accountability for the design, development, manufacture, sale and support of your PCs to ensure compatability and reliability? Does that company, in the words of IBM System User, appear to be "the only exception to the rule of inverse relationship between price and reliability"?

Indeed does that company hold the number one position for vendor support in the prestigious Computer Weekly/ Datapro customer satisfaction survey, and has it done so for the last three years? We suspect not.

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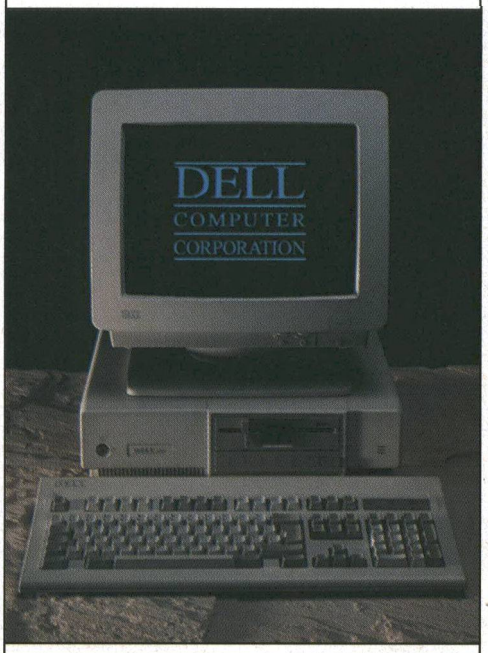
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Survey also on the cover disk

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# THE GREAT PC



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**14. Which of the following types of hardware is your organisation likely to purchase in the next 12 months?**
*Please tick all that apply.*

- ☐ 286 PCs
- ☐ 386 PCs
- ☐ 486 PCs
- ☐ Portable computers
- ☐ Printers
- ☐ Scanners and other I/O devices
- ☐ Expansion cards
- ☐ Networking equipment

**15. Approximately how many PC compatible computers will your organisation purchase in the next 12 months?**

☐ Up to 2 ☐ 3 or more ☐ Don't know

**16. Would you purchase *PC Today* if there wasn't a disk on the front cover?**

☐ Yes ☐ No ☐ Don't know

**17. Which of the following would encourage you to still purchase *PC Today* if it didn't have a cover disk?**
*Please tick only two.*

- ☐ A supplier help line
- ☐ Special bound in supplements
- ☐ Lower cover price
- ☐ More editorial pages
- ☐ Product discount vouchers

**18. Which of the following supplements would you like to read in *PC Today* in the next 12 months?**
*Please tick all that apply.*

- ☐ Networking
- ☐ Portable computers
- ☐ Presentation graphics software
- ☐ Games and leisure programs
- ☐ Shareware software
- ☐ Scanners and other peripherals
- ☐ Multimedia

**19. What type of PC compatible computer do you personally use at home and at work?** *Tick one in each category.*

| *At work* | *At home* |
|---|---|
| ☐ 8088/8086 | ☐ 8088/8086 |
| ☐ 286 | ☐ 286 |
| ☐ 386/386SX | ☐ 386/386SX |
| ☐ 486/486SX | ☐ 486/486SX |
| ☐ Other PC | ☐ Other PC |
| ☐ Not applicable | ☐ Not applicable |

**20. Into which of the following bands approximately does your organisation's annual computer budget fall?**

☐ Under £5,000 ☐ £10,000 - £25,000
☐ £5,000 - £9,999 ☐ Over £25,000

**21. What is your current or planned usage of Windows in the next 12 months?**

**23. Approximately how long have you been using a PC at work and at home?**

| *At work* | *At home* |
|---|---|
| ☐ Less than 3 months | ☐ Less than 3 months |
| ☐ 3 - 12 months | ☐ 3 - 12 months |
| ☐ 1 - 2 years | ☐ 1 - 2 years |
| ☐ 3 - 5 years | ☐ 3 - 5 years |
| ☐ More than 5 years | ☐ More than 5 years |
| ☐ Don't use one | ☐ Don't use one |

**24. Please indicate which of these computer magazines you look at or read every month.**

| | Almost always | Quite often | Only occasionally |
|---|---|---|---|
| Personal Computer World | ☐ | ☐ | ☐ |
| PC Direct | ☐ | ☐ | ☐ |
| PC Magazine | ☐ | ☐ | ☐ |
| PC Plus | ☐ | ☐ | ☐ |
| PC Today | ☐ | ☐ | ☐ |
| PC User | ☐ | ☐ | ☐ |
| Computer Buyer | ☐ | ☐ | ☐ |
| Computer Shopper | ☐ | ☐ | ☐ |
| What Micro? | ☐ | ☐ | ☐ |
| What's New in Computing | ☐ | ☐ | ☐ |
| What Personal Computer | ☐ | ☐ | ☐ |
| Micro Decision | ☐ | ☐ | ☐ |
| Computing Equipment | ☐ | ☐ | ☐ |
| Other | ☐ | ☐ | ☐ |

**25. Would you like to be considered for selection on to the *PC Today* reader panel to offer personal advice to the editor?**

☐ Yes ☐ No

**22. To enter the competition and stand the chance of winning a brand new Opal 386SX (25MHz, 2Mb ram, 105Mb hard disk etc.) PC please answer the following question.**
**Which of these are 32-bit microprocessors?**

☐ 8086 ☐ 80286 ☐ 80386 ☐ 80486

Name: .....

Address: .....

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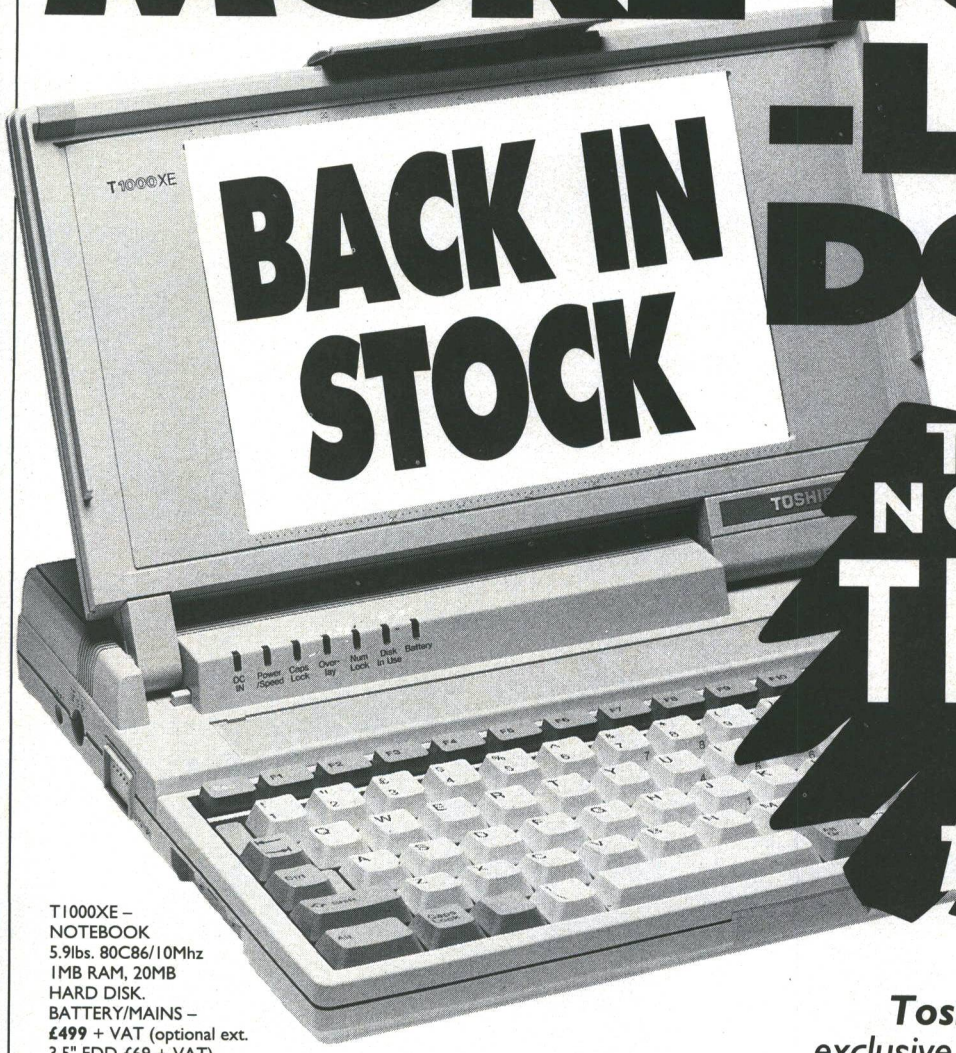
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PC TODAY
**Reader Survey,**

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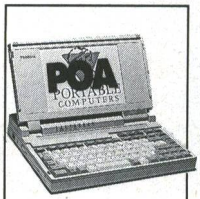
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IMB RAM 20MB HD
BATTERY/MAINS



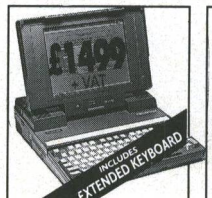

**T2000SX**
***NOTEBOOK***
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IMB RAM. VGA B/W
DISPLAY. 40MB HD
BATTERY/MAINS



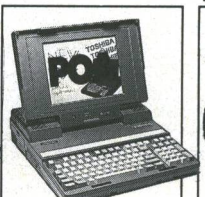

**T2000SXE**
***NOTEBOOK***
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2MB RAM. VGA DISPLAY
60MB HD. BATTERY/MAINS




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**386/SX20 £899**

386/SX 25 MHz Zero wait state CPU. 32K cache AMI bios. 2Mb RAM on motherboard expandable to 32Mb. 1.2 and 1.44 floppy disk drives. 40MD IDE hard disk drive. 0.28 dot pitch colour SVGA monitor with SVGA card. IDE hard and floppy disk controller card with one parallel, two serial and one games port.

**386/SX25 £949**

386/25DX 25 MHz zero wait state motherboard and CPU. 2Mb RAM on motherboard expandable to 32Mb 1.2 and 1.44 floppy disk drive. 40MD IDE hard disk drive. 0.28 dot pitch colour SVGA monitor with SVGA card. IDE hard and floppy disk controller card with one parallel, two serial and one games port.

**386-25DX £999**

386/33DX 33MHz zero wait state Motherboard and CPU. 4Mb RAM on motherboard expandable to 64Mb. 1.2 and 1.44 floppy disk drive. 40MD IDE hard disk drive. 0.28 dot pitch colour SVGA monitor with SVGA card. IDE hard and floppy disk controller card with one parallel, two serial and one games port.

**386/33DX £1199**

386/40DX 40MHz zero wait state Motherboard and CPU. 4Mb RAM on motherboard expandable to 64Mb. 1.2 and 1.44 floppy disk drive. 40MD IDE hard disk drive. 0.28 dot pitch colour SVGA monitor with SVGA card. IDE hard and floppy disk controller card with one parallel, two serial and one games port.

**386/40DX £1299**

486/33 33MHz zero wait state Motherboard and CPU. 4Mb RAM on Motherboard expandable to 64Mb. 1.2 and 1.44 floppy disk drive. 105Mb IDE hard disk drive. 0.28 dot pitch colour SVGA monitor with SVGA card. IDE hard and floppy disk controller card with one parallel, two serial and one games port.

**486/33 £1599**

COUNTER POINT

DESIGN AND INSTALLATION

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# INFO FILE

**Where to go and what to see in the PC world**

## Bulletin boards

Apricot: 021-456 2401
CIX: 081-399 5252
CompuServ: 071-490 8881
Data Retrieve: 0502 518274
Digital Matrix: 021-705 5187
Direct Line: 081-841 1847
Dr Solomon's Board: 0494 724946
Heath Data BBS: 081-986 4360
Hewlett Packard End User: 0344 361891
Lotus User Goup BBS: 0753 857453
Miracom Technical Support: 0473 232540
Organic Garden: 0375 380030
PageMaker BBS: 081-655 0164
PC Access: 071-608 0081
PC Forum: 0322 335348
PC Independent User Group: 0732 770539
PC Link: 0402 384914
PC Serve: 0895 420164
Pecan Software BBS: 0272 248076
Sierra Online: 0734 304227
StarBase One: 071-733 3992
The Music Studio: 061-727 7164
The Three Kings: 0354 56267
TUG II: 0905 77191
Vision BBS: 081-656 7941
Western Digital: 0372 745900
Zortech Technical Support: 081-855 3286

## Help lines

Amstrad Customer Service Centre: 0277 230222

Borland Database Enquiries: 0734 320777
Spreadsheet Enquiries: 0734 320788
Language Support: 0734 320100
Utilities Support: 0734 320799

Computer Associates Hotline: 0753 814848

Digital Matrix Customer Support: 021-722 3828

Digital Research: 0635 35304

Microsoft Technical Response: 0734 576744

WordPerfect Customer Hotline: 0932 850555

## Computer shows

**Smart Card '92**
March 3-5
Olympia 2, London
Contact: 0895 622233

**CD-Rom Europe**
March 31- April 2
Metropole, Brighton
Contact: 0895 622233

**The Ideal Home Computing Show**
April 2-5
Earls Court 2, London
Contact: 0895 67777

**Which Computer? Show**
April 7-10
NEC, Birmingham
Contact: 081-948 9976

**TECDOC '92 Conference**
April 24-26
Swallow Highcliffe Hotel, Bournemouth
Contact: 071-836 3357

**Midi Music Show**
April 24-26
Hammersmith, London
Contact: 081-549 3444

**Control & Instrumentation '92**
April 28-30
NEC, Birmingham
Contact: 071-938 2319

**Scottish Computer Show**
May 19-21
Exhibition & Conference Centre, Glasgow
Contact: 0822 614671

**Computer Shopper Show**
May 28-31
Olympia, London
Contact: 081-742 2828

**Software Development '92**
June 16-18
Wembley, London
Contact: 081-742 2828

**Business Computing '92**
September 15-18
Earls Court, London
Contact: 071-255 2154

## We need your help!

*If your company is running an event which may be of interest to* ***PC Today*** *readers, please send details clearly marked for Info File. Information should include: Title of the event, dates, target audience, location, company and telephone number.*

**AutoCAD User Group UK:** Aimed at all AutoCAD users. Contact – Alan Ray-Jones, West Coombe, Huish Champflower, Taunton TA4 2HG.

**C User Group:** Help for C programmers (and other languages derived from C, including C++) with PCs and other micros. Contact – Francis Glassborow, 64 Southfield Road, Oxford OX4 1PA.

**C++ User Group:** For object oriented C programmers. Contact – Mike Banahan, c/o City House, 190 City Road, London EC1V 2QH.

**.CDR Group:** Gallery of artwork and technical support for CorelDraw! users. Contact – Pat Bitton, 17 Hazeldon Road, London SE4 2BR.

**DataEase User Group:** For DataEase Users. Contact – Hitech House, 10 Blackfriars Street, Norwich NR3 1SF.

**British All Turbo Pascal Users' Group:** Hints, tips and advice for Borland Pascal users. Contact – David Bolton, BATPUG, 12 Clegg Avenue, Thornton, Cleveleys, Blackpool, Lancashire FY5 1BJ.

**Paradox User Group:** Help and advice for users of Borland's Paradox database. Contact – 2 Earldom Road, London, SW15 1BR.

**PC Independent User Group:** Lots of general help and advice for PC users. Contact – The Computer Advice Centre, 87 High Street, Tonbridge, Kent TN9 1RX.

**WordPerfect User Group:** Help, advice and macros for WoprdPerfect. Contact – Michael Norman, Dove Barn, Manor Farm, Wootton by Woodstock, Oxfordshire OX7 1DX.

**IBM PC User Group:** Technical support for all PC users. Contact – PO Box 360, Harrow HA1 4LQ.

**Lotus User Group:** For all Lotus products especially 1-2-3. Contact – 79-80 Peascod Street, Windsor, Berkshire SL4 1DH.

**Sage Sovereign:** For developers, dealers and users of Sovereign Accounts. Contact – Ernest Warner, 15 New Dover Road, Canterbury, Kent CT1 3AG.

**UK CD-rom User Group:** Hints, tips, help and advice for CD-rom users. Contact – High Wings, Salem, Treforys, Abertawe SA6 1XX.

**Windows User Group:** Windows hints, tips, shareware and so on. Contact – Enterprise House, Carlton Road, Worksop, Nottinghamshire S81 7QF.

# INFO FILE

## TRAINING COURSES

| Course name | Date | Location | Price | Aimed at | Contact |
|---|---|---|---|---|---|
| Advanced Lotus 1-2-3 Rel 3.1 | 18 Mar | Exeter | 115 | Advanced | OASYS CC&T (0392 427472) |
| Advanced PC Support | 7-10 Apr | Cirencester | 820 | Advanced | QA Training (0285 655888) |
| Applying Artificial Intelligence | 31 Mar-3 Apr | London | 1085 | Prgrmmrs/Mngrs | Learning Tree (0800 282 353) |
| CA-SuperCalc | 9-10 Mar | Slough | 400 | Advanced | Computer Associates (0895 272501) |
| Computer Literacy | 6 Mar | Wrexham | 50 | Beginners | Wrexham ITEC (0978 350575) |
| Configuring and Supporting Printers | 18 Mar | London | 170 | Beginners | Comtec (071-637 1234) |
| Create Spreadsheet Systems | 16-17 Mar | Windsor | 290 | Lotus Users | EXEC Systems (0753 850785) |
| Data Comms & Networking | 24-25 Mar | London | 663 | Advanced | Clarion (0734 732080) |
| dBase IV | 23-24 Mar | London | 175 | Beginners | EXEC Systems (0753 850785) |
| dBase IV for users | 30-31 Mar | Birmingham | 380 | Beginners | CTEC (021-200 1811) |
| Dos Advanced Level | 16 Mar | Manchester | 220 | Advanced | CTEC (061-834 6129) |
| Dos for Technical Users | 12 Mar | Slough | 225 | Advanced | Computer Associates (0895 272501) |
| Dos Overview | 11 Mar | Camberley | 155 | Beginners | BriTech (0276 682012) |
| Forecasting and Analysis Techniques | 23-24 Mar | Slough | 1195 | Intermediate | Computer Associates (0895 272501) |
| Hands-on Novell Networking | 3-6 Mar | London | 1085 | Networks | Learning Tree (0800 282 353) |
| How to build a better Team | 2 Mar | Dublin | 135 | Managers | Keye Productivity Centre (0494 817111) |
| How to build a better Team | 10 Mar | Birmingham | 141 | Managers | Keye Productivity Centre (0494 817111) |
| How to build a better Team | 11 Mar | Leeds | 141 | Managers | Keye Productivity Centre (0494 817111) |
| Introduction to Computing | 17 Mar | London | 150 | Beginners | Route-Plan & Comp Servs (081-989 0860) |
| Introduction to Desk Top Publishing | 24 Mar | London | 150 | Beginners | Route-Plan & Comp Servs (081-989 0860) |
| Introduction to Dos | 4/18 Mar | London | 99 | Beginners | Comp-Tutor Services (081-551 7275) |
| Introductory Dos | 10 Mar | Wrexham | 99 | Beginners | Wrexham ITEC (0978 350575) |
| Introduction to DrawPerfect | 13 Mar | Exeter | 95 | Beginners | OASYS CC&T (0392 427472) |
| Introduction to UNIX | 25-26 Mar | Exeter | 135 | Beginners | OASYS CC&T (0392 427472) |
| Introductory Word for Windows | 19-20 Mar | Wrexham | 198 | Beginners | Wrexham ITEC (0978 350575) |
| Local Area Networking | 24-25 Mar | London | 663 | Networks | Clarion (0734 732080) |
| Lotus 1-2-3 for Windows | 16-17 Mar | London | 410 | Beginners | CTEC (071-583 2322) |
| Lotus 1-2-3 Introduction | 9-10 Mar | Camberley | 310 | Beginners | BriTech (0276 682012) |
| Lotus 1-2-3 v2 | 10-11 Mar | Stockton | 320 | Beginners | Micro Tech Centre (091-417 8517) |
| Lotus 1-2-3 for Windows | 11 Mar | Windsor | 205 | Intermediate | EXEC Systems (0753 850785) |
| Macrowriting | 12 Mar | London | 205 | Beginners | EXEC Systems (0753 850785) |
| Making the most of Windows | 19-20 Mar | Cirencester | 440 | Intermediate | QA Training (0285 655888) |
| Network Management | 19-20 Mar | London | 663 | Networks | Clarion (0734 732080) |
| Novell Supervisor 286 | 19-20 Mar | Manchester | 480 | Networks | CTEC (061-834 6129) |
| Novell Supervisor 386 | 19-20 Mar | Edinburgh | 220 | Networks | CTEC (031-220 46787) |
| Novell Troubleshooting Workshop | 30 Mar | London | 170 | Networks | Comtec (071-637 1234) |
| Object-Oriented Analysis | 1-3 Apr | Cirencester | 760 | Advanced | QA Training (0285 655888) |
| PC Awareness | various | London | 190 | Beginners | CTEC (071-583 2322) |
| PC Introduction | 2/30 Mar | London | 120 | Beginners | Comtec (071-637 1234) |
| PC Networking | 30 Mar | London | 240 | Intermediate | QA Training (0285 655888) |
| Project Management II | 3-6 Mar | London | 1085 | Tech Managers | Learning Tree (0800 282 353) |
| Q&A Introduction | 19-20 Mar | Camberley | 310 | Beginners | BriTech (0276 682012) |
| SAS for Applications Development | 2-3 Mar | Woking | 445 | Intermediate | SPS (0483 730771) |
| SAS Fundamentals | 11-13 Mar | Woking | 645 | Beginners | SPS (0483 730771) |
| SAS Version 6.06 Upgrade | 24-26 Mar | Woking | 645 | Intermediate | SPS (0483 730771) |
| Software QA & Testing | 10-13 Mar | London | 995 | S/ware Engineers | Learning Tree (0800 282 353) |
| Stats & SAS in Capacity Management | 4-6 Mar | Woking | 645 | Intermediate | SPS (0483 730771) |
| SuperCalc 5 | 3 Mar | Morpeth | 160 | Intermediate | Micro Tech Centre (091-417 8517) |
| SuperCalc 5 | 19-20 Mar | Wrexham | 198 | Beginners | Wrexham ITEC (0978 350575) |
| Supporting PCs & MS Dos | 16-17 Mar | London | 340 | Beginners | Comtec (071-637 1234) |
| Telecomms Fundamentals | 3-4 Mar | London | 663 | Comms | Clarion (0734 732080) |
| Understanding Data Communications | 11-13 Mar | London | 795 | Begin-Advan | Infomatics (081-871 2546) |
| Using and supporting Windows 3.0 | 16 Mar | Uxbridge | 200 | Beginners | Computer Associates (0895 272501) |
| Using Dos | 13 Mar | Washington | 160 | Beginners | Micro Tech Centre (091-417 8517) |
| Using Windows 3 | 11 Mar | London | 160 | Beginners | Comtec (071-637 1234) |
| Windows Appreciation | 18 Mar | Newcastle | 220 | Beginners | CTEC (091-212 1244) |
| Word for Dos | 23-24 Mar | Washington | 320 | Beginners | Micro Tech Centre (091-417 8517) |
| Word for Windows | 10 Mar | London | 150 | Beginners | Route-Plan & Comp Servs (081-989 0860) |
| WordPerfect | 18 Mar | Camberley | 165 | Advanced | BriTech (0276 682012) |
| WordPerfect 5.1 | 11 Mar | London | 99 | Beginners | Comp-Tutor Services (081-551 7275) |
| WordPerfect 5.1 | 25 Mar | London | 99 | Intermediate | Comp-Tutor Services (081-551 7275) |
| WordPerfect 5.1 | 3 Mar | London | 150 | Beginners | Route-Plan & Comp Servs (081-989 0860) |
| WordStar Introduction | 19-20 Mar | Camberley | 310 | Beginners | BriTech (0276 682012) |

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## DRIVES

### SEAGATE

**2.5" Low-profile**

| | | | | |
|---|---|---|---|---|
| ST9051A | IDE-AT | 42Mb | 16ms | 265 |

**3..5" One inch high**

| | | | | |
|---|---|---|---|---|
| ST325N | SCSI | 21Mb | 28ms | 169 |
| ST351A/X | IDE-ATXT | 42Mb | 28ms | 149 |
| ST3096A | IDE-AT | 89Mb | 15ms | 198 |
| ST3120A/X | IDE-ATXT | 107Mb | 16ms | 239 |
| ST3144A | IDE-AT | 130Mb | 15ms | 259 |

**3.5" Half Height**

| | | | | |
|---|---|---|---|---|
| ST1111E | ESDI | 98Mb | 15ms | 399 |
| ST1201E | ESDI | 177Mb | 15ms | 597 |
| ST157A | See ST351A/X | | | |
| ST1102A | See ST3096A | | | |
| ST1144A | See ST3144A | | | |
| ST1162A | IDE-AT | 143Mb | 15ms | 395 |
| ST1186A | IDE-AT | 163Mb | 15ms | 399 |
| ST1201A | IDE-AT | 177Mb | 15ms | 429 |
| ST1239A | IDE-AT | 211MB | 15ms | 429 |
| ST1480A | IDE-AT | 429Mb | 14ms | 899 |
| ST125-1 | MFM | 20Mb | 28ms | 142 |
| ST138-1 | MFM | 32Mb | 20ms | 156 |
| ST151 | MFM | 42Mb | 28ms | 197 |
| ST1100 | MFM | 82Mb | 15ms | 359 |
| ST138R-1 | RLL | 32Mb | 28ms | 149 |
| ST157R-1 | RLL | 49Mb | 28ms | 159 |
| ST1150R | RLL | 133Mb | 15ms | 415 |
| ST125N-1 | SCSI | 20Mb | 28ms | 149 |
| ST138N-1 | SCSI | 32Mb | 28ms | 150 |
| ST157N-1 | SCSI | 49Mb | 28ms | 152 |
| ST177N | SCSI | 60Mb | 24ms | 209 |
| ST1096N | SCSI | 84Mb | 24ms | 219 |
| ST1133N | SCSI | 113Mb | 15ms | 389 |
| ST1186N | SCSI | 163Mb | 15ms | 429 |
| ST1201N | SCSI | 177Mb | 15ms | 449 |
| ST1239N | SCSI | 211Mb | 15ms | 466 |
| ST1400N | SCSI | 400Mb | 14ms | 799 |
| ST1401N | SCSI | 401Mb | 14ms | 829 |
| ST1480N | SCSI | 429Mb | 14ms | 845 |

**5.25" Half Height**

| | | | | |
|---|---|---|---|---|
| ST2106E | ESDI | 94Mb | 16ms | 419 |
| ST2182E | ESDI | 160Mb | 16ms | 629 |
| ST2383E | ESDI | 338Mb | 16ms | 789 |
| ST2274A | IDE-AT | 240Mb | 16ms | 759 |
| ST2383A | IDE-AT | 338Mb | 16ms | 769 |
| ST251 | MFM | 42Mb | 28ms | 169 |
| ST277R-1 | RLL | 65Mb | 28ms | 179 |
| ST277N | SCSI | 65Mb | 28ms | 199 |
| ST296N | SCSI | 85Mb | 28ms | 209 |
| ST2106N | SCSI | 94Mb | 16ms | 399 |
| ST2125N | SCSI | 110Mb | 18ms | 459 |
| ST2209N | SCSI | 183Mb | 16ms | 569 |
| ST2383N | SCSI | 338Mb | 16ms | 749 |
| ST2502N | SCSI | 432Mb | 15ms | 1029 |

**5.25" Full Height**

| | | | | |
|---|---|---|---|---|
| ST4182E | ESDI | 160Mb | 17ms | 547 |
| ST4383E | ESDI | 337Mb | 18ms | 828 |
| ST4384E | ESDI | 337Mb | 15ms | 848 |
| ST4442E | ESDI | 387Mb | 16ms | 948 |
| ST4766E | ESDI | 676Mb | 16ms | 1195 |
| ST4767E | ESDI | 676Mb | 12ms | 1267 |
| ST4182N | SCSI | 160Mb | 17ms | 546 |
| ST4350N | SCSI | 307Mb | 18ms | 794 |
| ST4376N | SCSI | 330Mb | 18ms | 837 |
| ST4385N | SCSI | 337Mb | 10ms | 915 |
| ST4766N | SCSI | 676Mb | 16ms | 1179 |
| ST4767N | SCSI | 676Mb | 12ms | 1346 |
| ST41200N | SCSI | 1050Mb | 17ms | 1399 |
| ST41520N | SCSI | 1352Mb | 12ms | 2789 |
| ST41600N | SCSI | 1352Mb | 12ms | 2439 |
| ST41650N | SCSI | 1420Mb | 15ms | 1777 |

**PS/2 UPGRADES with cache effective 9ms**

| | | | | |
|---|---|---|---|---|
| P52-52D | Desktop | 52Mb | 17ms | 449 |
| P52-80D | Desktop | 80Mb | 17ms | 499 |
| P52-105D | Desktop | 105Mb | 17ms | 599 |
| PS2-210D | Desktop | 210Mb | 15ms | 1099 |
| PS2-425D | Desktop | 425Mb | 13ms | 1799 |
| P52-105T | Tower | 105Mb | 17ms | 599 |
| P52-210T | Tower | 210Mb | 15ms | 1099 |
| P52-425T | Tower | 425Mb | 13ms | 1799 |

### MAXTOR

**3.5"**

| | | | | |
|---|---|---|---|---|
| 7120 A/S | IDE/SCSI | 130Mb | 15ms | 299 |
| LXT213 A/S | IDE/SCSI | 213Mb | 15ms | 499 |
| LXT340 A/S | IDE/SCSI | 340Mb | 13ms | 799 |

**5.25"**

| | | | | |
|---|---|---|---|---|
| XT8380 E/S | ESDI/SCSI | 389Mb | 14.5ms | 849 |
| XT8760 E/S | ESDI/SCSI | 760Mb | 16.5ms | 1049 |
| PO12 E/S | ESDI/SCSI | 1.2Gb | 13ms | 1549 |
| PO17 E/S | ESDI/SCSI | 1.7Gb | 13ms | 1899 |

### QUANTUM with cache effectibe 9ms

| | | | | |
|---|---|---|---|---|
| IMP52-AT | IDE-AT | 52Mb | 17ms | 179 |
| IMP105-AT | IDE-AT | 105Mb | 17ms | 279 |
| IMP210-AT | IDE-AT | 210Mb | 15ms | 479 |
| IMP425-AT | IDE-AT | 425Mb | 14ms | 889 |
| IMP52-S | SCSI | 52Mb | 17ms | 189 |
| IMP105-S | SCSI | 105Mb | 17ms | 295 |
| IMP210-S | SCSI | 210Mb | 15ms | 495 |
| IMP425-S | SCSI | 425Mb | 14ms | 895 |

### FUJITSU

**3.5" One inch high**

| | | | | |
|---|---|---|---|---|
| M2616ET | IDE-AT | 105Mb | 19ms | 225 |
| M2613ET | IDE-AT | 135Mb | 19ms | 315 |
| M2614ET | IDE-AT | 180Mb | 19ms | 369 |
| M2622SA | SCSI | 330Mb | 12ms | 799 |
| M2623SA | SCSI | 425Mb | 12ms | 899 |
| M2624SA | SCSI | 520Mb | 12ms | 999 |

**5.25" Full Height**

| | | | | |
|---|---|---|---|---|
| M2261SA/E | SCSI/ESDI | 380Mb | 18ms | 849 |
| M2263SA/E | SCSI/ESDI | 676Mb | 16ms | 1079 |
| M2266SA | SCSI | 1050Mb | 16ms | 1599 |

CDROM Including controller card
Goldstar GT2000 External With 3 disks 339

### CONNER

**3.5"**

| | | | | |
|---|---|---|---|---|
| CP3044 | IDE-AT | 42Mb | 25ms | 169 |
| CP30084 | IDE-AT | 84Mb | 25ms | 259 |
| CP3104 | IDE-AT | 104Mb | 25ms | 299 |
| CP30104 | IDE-AT | 120Mb | 19ms | 299 |
| CP3204 | IDE-AT | 212Mb | 16ms | 499 |

**2.5"**

| | | | | |
|---|---|---|---|---|
| CP2044 | IDE-AT | 40Mb | 19ms | 325 |
| CP2064 | IDE-AT | 60Mb | 19ms | 345 |

### HARDCARDS

| | | | |
|---|---|---|---|
| Plus 52 Card | 52Mb | 9ms | 275 |
| Plus105 Card | 105Mb | 9ms | 399 |

### FLOPPY DRIVES

| | | | |
|---|---|---|---|
| 3.5" | 1.44MB | | 42 |
| 3.5" | 720K | | 42 |
| 3.5" bracket | | | 5 |
| 3.5" external for Amstrad 1512/1640 | | | 79 |
| 5.25" | 1.2Mb | | 45 |
| 5.25" | 360K | | 45 |
| 3.5" diskettes | 1.44Mb | box of 10 | 8 |
| 5.25" diskettes | 1.2Mb | box of 10 | 6 |

### EXTERNAL DEVICES

**Parallel Port Connections**

| | | |
|---|---|---|
| Hard Drives | 40Mb | 299 |
| | 100Mb | 499 |
| Floppy Drives | 3.5"Hd | 199 |
| | 5.25"Hd | 199 |
| Tape Backup | 60/120Mb | 399 |
| | 120/250Mb | 499 |

## MONITORS

### TYSTAR/SAMSUNG/SAMPO

| | | | | |
|---|---|---|---|---|
| MM14 | 14" | | Mono | 79 |
| MMV14 | 14" | VGA | Mono | 99 |
| MCV14 | 14" | VGA | 800 x 600 | 195 |
| MCSV14 | 14" | Super VGA | 1024 x 768 | 199 |
| MCM14 | 14" | Multisync | 1024 x 768 | 279 |

### INTERQUAD

| | | | | |
|---|---|---|---|---|
| AM1412 | 14" | VGA | Mono | 115 |
| AC1432 | 14" | VGA | 640 x 480 | 229 |
| AC1441 | 14" | Super VGA | 1024 x 768 | 249 |
| AC1448 | 14" | Non-Interlace | 1024 x 768 | 279 |
| AC1449 | 14" | Lo-radiation | 1024 x 768 | 329 |
| MS1480 | 14" | Multiscan | 1024 x 768 | 319 |
| AC1564 | 15" | Multiscan | 1280 x 1024 | 349 |
| AC1791 | 17" | Super VGA | 1080 x 1024 | 849 |

### PANASONIC inc 2 years on-site warranty

| | | | | |
|---|---|---|---|---|
| C1381 | 14" | Multiscan | 1024 x 768 | 249 |
| TX1703 | 17" | Multiscan | 1024 x 768 | 799 |
| TX2013 | 20" | Multiscan | 1024 x 768 | 1199 |

## COLORADO TAPE STREAMERS

**with software**

### JUMBO SERIES

| | | |
|---|---|---|
| DJ10 Internal 80/120Mb | Add £40 for PS/2 | 169 |
| DJ10 External 80/120Mb | Add £49 for PS/2 | 249 |
| DJ20 Internal 250Mb | Add £40 for PS/2 | 225 |
| DJ20 External 250Mb | Add £49 for PS/2 | 305 |
| External box | | 50 |
| Ext. port XT/AT | | 30 |
| Ext. port PS/2 | | 49 |
| Adaptor PS/2 | | 40 |
| Controller XT/AT | | 75 |
| Controller XT/AT with data compression | | 159 |
| Controller PS/2 with data compression | | 199 |
| 3-way connector | | 25 |
| 120/250Mb tape | | 22 |

## PERIPHERALS

| | | |
|---|---|---|
| Keyboard | AT/XT 102 UK Key | 29 |
| Mouse | serial 2-button | 19 |
| Joystick | Quickshot Warrior 5 | 19 |
| Scanner | Gemius GS4500 | 99 |

## PRINTERS

### PANASONIC

| | | |
|---|---|---|
| KXP1123 | 24 pin | 135 |
| KXP1124I | 24 pin 80 col 240/80cps | 179 |
| KXP1624 | 24 pin 136 col | 287 |
| KXP1695 | 9 pin 136 col | 281 |
| KXP1654 | 24 pin 136col 300/100cps | 342 |
| KXP4420 | 22 fonts 8ppm | 635 |
| KXP4450i | Dual bin 22 fonts 11ppm | 944 |
| KXP4455 | Postscript 39 fonts 11ppm | 1529 |

### CANON

| | | |
|---|---|---|
| BJ10e | Inkjet | 189 |
| BJ300 | Inkjet 80 col | 342 |
| BJ330 | Inkjet 136 col | 392 |
| LBP-4 | Plus | 569 |
| LBP-8111 | | 979 |
| LBP-8111T | | 1369 |
| LBP-8111R | | 1479 |

### STAR

| | | |
|---|---|---|
| LS-4 | | 659 |

### NEC

| | | |
|---|---|---|
| 266 Laser | Par/ser/Apple 8ppm | 719 |
| S60 Postscript | 8 fonts 6ppm | 1199 |

## BOARDS

### SEAGATE CONTROLLERS

| | | | | | |
|---|---|---|---|---|---|
| ST01 | XT/AT | SCSI | 8B | HD | 19 |
| ST02 | XT/AT | SCSI | 8b | HD/2FD | 29 |
| ST05 | XT | IDE | 8b | 2HDE | 19 |
| ST07A | AT | IDE | 16b | 2HD | 19 |
| ST08A | AT | IDE | 16b | 2HD/2FD | 25 |
| ST11M | XT | MFM | 8b | 2HD | 31 |
| ST11R | XT | RLL | 8b | 2HD | 31 |
| ST21M | AT | MFM | 16b | 2HD | 29 |
| ST21R | AT | RLL | 16b | 2HD | 29 |
| ST22M | AT | MFM | 16b | 2HD/2FD | 35 |
| ST22R | AT | RLL | 16B | 2HD/2FD | 35 |

### ADAPTEK CONTROLLERS

| | | | | | |
|---|---|---|---|---|---|
| AHA1540 | ISA | SCSI | 16b | HD | 199 |
| AHA1542 | ISA | SCSI | 16b | HD/FD | 219 |
| AHA1640 | PS/2 | SCSI | 16b | HD | 329 |
| AHA1642 | PS/2 | SCSI | 16b | HD/FD | 359 |
| AHA1740 | EISA | SCSI | 32b | HD | 449 |

### FUTURE DOMAIN CONTROLLERS

| | | | | | |
|---|---|---|---|---|---|
| TMC1660DNK | ISA | SCSI | 16b | HD | 179 |
| TMC1680DNK | ISA | SCSI | 16b | HD/FD | 199 |
| MCS700 | PS/2 | SCSI | 16b | HD | 259 |

### DTC CONTROLLERS

| | | | | | |
|---|---|---|---|---|---|
| DTC6282 | ISA | ESDI | 16b | 2HD/4FD | 145 |
| DTC3180 | ISA | SCSI | 16b | HD | 89 |
| DTC3280 | ISA | SCSI | 16b | HD/FD | 119 |

### MULTI I/O

| | | | | | |
|---|---|---|---|---|---|
| IDESPC | P/S/G | IDE | 16b | 2HD/2FD | 32 |
| SPCARD | P/S/G | | 8b | | 22 |

### MEMORY BOARDS Unpopulated

| | | |
|---|---|---|
| BOCA AT00 | 0-2Mb | 109 |
| BOCA AT80/90 | 0-8Mb | 119 |

### MOTHER BOARDS

(Add £39 per Mb of RAM required)

| | | |
|---|---|---|
| 286 16MHz | | 69 |
| 286 20MHz | | 97 |
| 386sx 16MHz | | 142 |
| 386sx 20MHz | | 164 |
| 386sx 25MHz | | 199 |
| 386 25MHz | | 249 |
| 386 33MHz | cache | 299 |
| 386 40MHz | cache | 349 |
| 486sx 20MHz | cache | 399 |
| 486 25MHz | cache | 599 |
| 486 33MHz | cache | 649 |

### DISPLAY CARDS

| | | | | |
|---|---|---|---|---|
| MGA | | 8 bit | Mono/p-port | 19 |
| VGA | 256K | 8 bit | 800x600 | 49 |
| VGA | 256K | 8/16 bit | 800x600 | 39 |
| SVGA | 512K | 16 bit | 1024x768 | 59 |
| SVGA-1 | 1 Mb | 16 bit | 1024x768 | 79 |
| AHEAD WIZ256 | 256K | 16 bit | 800x600 | 69 |
| AHEAD WIZ512 | 512K | 16 bit | 1024x768 | 79 |
| AHEAD WIZ1Mb | 1 Mb | 16 bit | 1024x768 | 99 |

### MEMORY CHIPS

| | |
|---|---|
| SIMM 256Kx9 80ns | 10 |
| SIMM 1Mbx9 80ns | 35 |
| SIMM 4Mbx9 80ns | 149 |
| SIP 256Kx9 80ns | 11 |
| SIP 1Mbx9 80ns | 39 |

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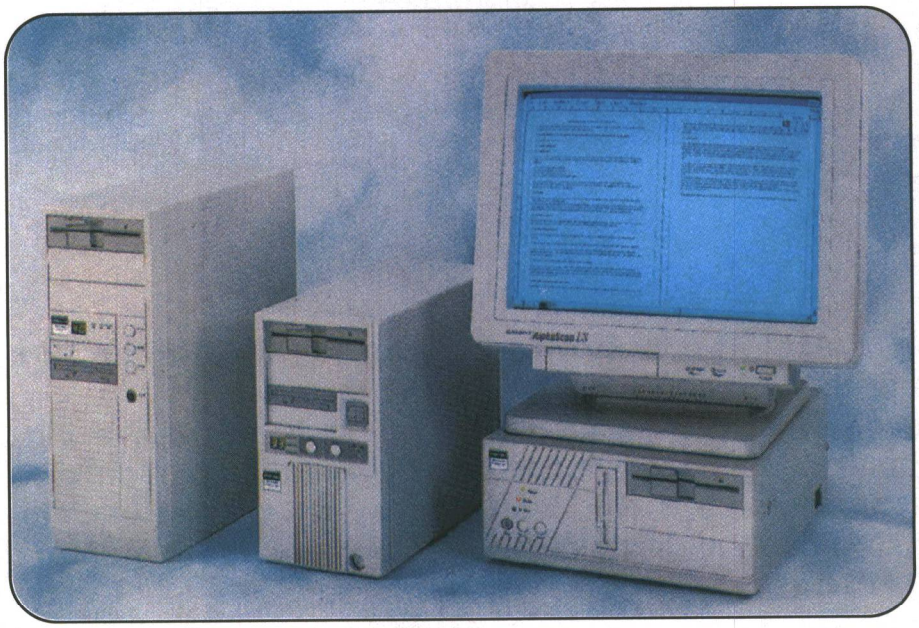
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| | 386SX | 386DX | | | 486SX | | 486DX |
|---|---|---|---|---|---|---|---|
| *CPU* | 386SX-25 | 386DX-25 | 386DX-33 | 386DX-40 | 486SX-20 | 486DX-33 | EISA 486DX-33 |
| *Chipset* | OPTI | OPTI | OPTI | OPTI | SYMPHONY | SYMPHONY | INTEL |
| *Math co-processor* | 80387SX | 80387 or Weitek 3167 | | | 80487SX | Weitek 4167 | Weitek 4167 |
| *Memory -standard* | 2MB | 2MB | 4MB | 4MB | 4MB | 4MB | 4MB |
| *- upgradable to* | 16MB | 16MB | 32MB | 32MB | 32MB | 32MB | 64MB |
| *Cache - standard* | 32MB | 64KB | 64KB | 64KB | 64KB | 64KB | 64KB |
| *- upgradable to* | N/A | 256KB | 256KB | 256KB | 256KB | 256KB | 512KB |
| *Landmark speed* | 26 | 28 | 55 | 68 | 59 | 125 | 110 |
| *Common features* | Compact desktop with 200W PSU, 102 keys tactile enhanced UK keyboard, 1 5.25" or 3.5" floppy drive, 16 bit multi-I/O card: supports 2 IDE hard drives, 2 floppy drives, 2 serial ports and 1 parallel port, 1MB VGA card and 40M hard disk | | | | | | **!! Warning !! Do not buy a EISA computer unless you buy EISA controller card too.** |
| *14" SEVGA* | **£913** | **£1024** | **£1052** | **£1080** | **£1258** | **£1456** | |
| *17" SEVGA* | **£1389** | **£1504** | **£1532** | **£1560** | **£1738** | **£1936** | |
| *20" 1280 x 1024* | **£1697** | **£1810** | **£1840** | **£1867** | **£2044** | **£2243** | |

**Options (please add to the above price)**
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**Network cards** Genuine NE1000 £99, NE2000 £130, compatible card P.O.A. NP600 32MB/sec network card £600 etc
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Matthew McGrath goes shopping in the UK's first superstore dedicated to the PC

# The only way to buy?

THE external facade of PC World is no different from any other large suburban superstore. You can walk in, grab a trolley and start shopping before you realise that the products you're staring at on the shelves are actually PCs, printers, peripherals and software.

The concept is relatively simple. Apply the same marketing methods to PCs that Sainsburys and Tesco's have applied to food, and house it all in a single, large superstore where you can buy all you need or simply browse through the aisles.

PC World opened its doors early in November and managing director Jan Murray is confident of success, but his hopes are very much grounded in reality. "At present we're losing money, which is to be expected at this stage of such a large scale venture. If we are still losing money in 12 months time then the outlook for the project will not be good. To date I'm happy with the progress we've made. I think we're making an impact".

Murray believes that the time is now right for PC World. The small computer dealer is disappearing says Murray, the high street electrical stores are not filling the gap and there are deficiencies in the service offered by mail order houses. The PC, he believes, is about to become a consumer product and he has set out to treat it as one.

"There is plenty of space here," said Murray commenting on the 30,000 odd feet that make up the store "...and we don't set out to intimidate the customer. We aim to give high quality service at a reasonable cost and in an atmosphere where the customer can walk around and see various products go through their paces before deciding to buy".

Critics of the concept say that the PC superstore idea will not catch on here in the UK as it has in the United States where the number has grown from 6 to 78 in four years.

The skeptics point to the higher disposable incomes of the Americans and the lower cost of PCs generally as reasons for failure, but Murray is confident he can confound them. "I went to Silicon Valley recently and there are stores there with a potential market of 500,000 people. Here at PC World we have a potential market of 10 million".

The emphasis on service is evident with the customer service centre positioned just inside the main doors. Here all repairs are carried out in front of the customer so he can see what's going on. This centre will also configure systems and install software for a nominal fee so that buyers can take their purchases home and immediately get to work.

PC World hosts many of the big names in computing such as IBM, Compaq and Apple but the project received a major boost with the decision of Dell to sell their PCs through the store. This is Dell's first step outside the direct channel.

During my visit to PC World there was a lot of customer interest in the Dell products and people were picking up PC systems, placing them on their trolleys and wheeling them to the checkout.



*PC World's Jan Murray is cautiously confident about the store's future*

Though they stock all the leading DTP, word processing, database and accounting software at competitive prices the biggest sellers to date have been utilities. But PC World are not content to emphasise their qualities as a better and more convenient outlet, arguing that they are very competitive in price terms as well.

On special offer at present are the IBM PS1 with 30Mb hard disk, mono monitor, mouse and Microsoft Works for £499. An OKI laser costs £499 while and Amstrad DMP 3160 sells for £69. Toshiba portables sell from £829 upwards.

Software prices are also keen with WordStar for Windows selling at £225, with PageMaker 4 at £449.

The fastest movers of all have been the shoplifters who have illegally removed a lot of software and smaller peripherals on display. "This is the risk you take," says Murray. "If you want people to have access, then you encourage some people to take a chance". He assures me that effective counter measures have now been taken.

There are plans afoot to expand PC World by 10,000 feet in the near future. Murray also plans a new store in North London in the new year, but has these words for potential competitors: "With London and the South East taking over half of all PC sales anyway the first superstore will obviously have advantages. I don't think people really realise what they're taking on. It's not that easy ".

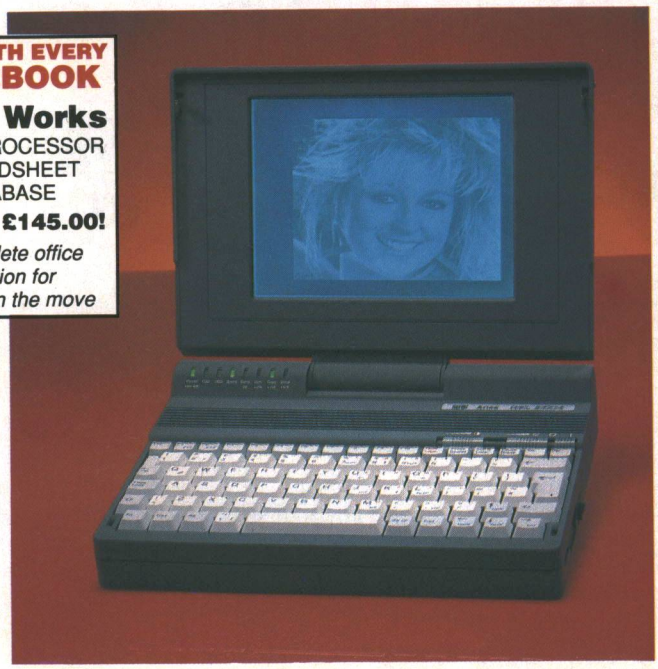
With plans for in-store product launches in the future and expanded ranges of products, PC World aim to offer the PC buyer an alternative and more responsive channel. It will be to the benefit of both customer and trade alike if they succeed.

# Premier performance

## Aries Notebooks

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DATABASE
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- ▲ VGA 640 x 480 backlit screen
- ▲ Removable NICad battery with 3.5 hours life
- ▲ Full travel 81 key keyboard with extended keyboard overlay
- ▲ Advanced power management for power conservation
- ▲ Auto resume mode for user convenience
- ▲ External VGA port for colour monitors
- ▲ Easy access maths co-processor socket
- ▲ Nine pin serial port, 25 pin printer port
- ▲ Smaller than A4, just 2.25" thick
- ▲ Weighs just 6.3 lbs.
- ▲ Free padded carry case
- ▲ Auto ranging power charger
- ▲ MsDos 5 included

Aries

## Far from faint praise

**The Aries brand Notebook PCs from Watford Electronics are, to say the least, inexpensive. Yet they have earned rich praise from the independent, professional reviewers who take performance into account as much as a good price.**

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"The Aries NBL36X20 is the latest addition to the Watford range of portable PCs and like its predecessors, it is both inexpensive, yet surprisingly good.
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The best of the bunch is easily the Watford Electronics Aries NBL36X20. This offers the best combination of features at the best price."

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PC PLUS RECOMMENDED

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***Evening Standard***
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| | | Price | Price inc. BJ-10ex |
|---|---|---|---|
| **NB36X20/20** | 20MHZ & 20MB HD | £975 | **£1155** |
| **NB36X20/40** | 20MHZ & 40MB HD | £1095 | **£1275** |
| **NB36X20/60** | 20MHZ & 60MB HD | £1195 | **£1379** |
| **NB36X20/80** | 20MHZ & 80MB HD | £1395 | **£1575** |



The Canon BJ-10ex weighs just 4.6lbs and is about the size of an A4 sheet of paper. 83 cps letter quality. 360 x 360 dpi resolution.

**NOTEBOOK OPTIONS:**

- Ram Upgrade Additional 1MB £89
  Additional 2MB £149
  Additional 4MB £245
- Carry Case for Notebook & PSU £28
- Carry Case for Notebook & BJ-10ex £39
- Car Charger TBA
- External 5.25" {1.2MB Drive £89
- Spare Battery Pack £29
- 12 months ON-SITE Maintenance Warranty £45

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These are standard, popular configurations. We are always willing to quote for special systems pre-configured to your precise instructions.



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**There are no hidden extra costs – but all our systems come with many unseen extras.**

**Extra 1**... Bundles of software. All Aries PCs are supplied with free software – MS-DOS 3.3 MS-DOS 4 or MS-DOS 5. What's more, all desktops come with either Windows 3 and a mouse OR Multiwriter 2, PC Organiser, GEM 3, Logitech Finesse DTP and a mouse.

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## All Aries PC 386/486 systems include:

• 1.44MB 3.5" or 1.2MB 5.25" Drive (Pls specify • Combined FDD/HDD controller • Mini Tower Case • Parallel Port • 2 Serial Ports • Games Port • Super VGA Card with 512K RAM • Enhanced 102 key keyboard • Legitimate BIOS with built-in set-up routine • OS/2 and UNIX optimisation • 200W PSU • 8 expansion slots • Mouse • Bundles of Software (See Extras for various offerings) • 12 months ON-SITE Maintenance (within mainland UK only)

## AT286 £399

•80286 Processor •8/16MHz switchable •1MB RAM on-board expandable to 4MB •Co-Processor socket •EMS LIM 4.0

| Monitor<br>Resolution | 14" Mono Super VGA (1024x768) | 14" Colour Super VGA (1024x768) | 14" Colour XGA Multiscan (1024x768-N.I.) |
|---|---|---|---|
| No HDD | £ 479 | 589 | 635 |
| 40MB/28ms | £ 605 | 715 | 759 |
| 105MB/17ms | £ 705 | 815 | 859 |
| 210MB/14ms | £ 805 | 915 | 959 |
| 330MB/14ms | £ 1205 | 1315 | 1359 |

## 386DX-40 Cache £689

•80386DX-40 Processor •64K Cache RAM expandable to 256K •8/40MHz switchable •1MB RAM on-board expandable to 32MB •Co-Processor socket •Landmark rating 94.8MHz

| Monitor<br>Resolution | 14" Mono Super VGA (1024x768) | 14" Colour Super VGA (1024x768) | 14" Colour XGA Multiscan (1024x768-N.I.) |
|---|---|---|---|
| No HDD | £ 769 | 879 | 925 |
| 40MB/28ms | £ 895 | 1005 | 1049 |
| 105MB/17ms | £ 995 | 1095 | 1149 |
| 210MB/14ms | £ 1095 | 1195 | 1249 |
| 330MB/14ms | £ 1495 | 1595 | 1649 |

## 486DX-33 Cache £1049

•80486DX-33 Processor •256K Cache RAM •8/33MHz switchable •4MB RAM on-board expandable to 32MB •Weitek socket •Landmark rating 152MHz

| Monitor<br>Resolution | 14" Mono Super VGA (1024x768) | 14" Colour Super VGA (1024x768) | 14" Colour XGA Multiscan (1024x768-N.I.) |
|---|---|---|---|
| No HDD | £ 1129 | 1239 | 1285 |
| 40MB/28ms | £ 1255 | 1365 | 1409 |
| 105MB/17ms | £ 1355 | 1465 | 1509 |
| 210MB/14ms | £ 1455 | 1565 | 1609 |
| 330MB/14ms | £ 1855 | 1965 | 2009 |

## 386SX-25 Cache £529

•80386SX-25 Processor •16K Cache RAM expandable to 128K •8/25MHz switchable •1MB RAM on board expandable to 16MB •Co-Processor socket•Landmark rating 36MHz

| Monitor<br>Resolution | 14" Mono Super VGA (1024x768) | 14" Colour Super VGA (1024x768) | 14" Colour XGA Multiscan (1024x768-N.I.) |
|---|---|---|---|
| No HDD | £ 609 | 719 | 765 |
| 40MB/28ms | £ 735 | 845 | 889 |
| 105MB/17ms | £ 835 | 945 | 989 |
| 210MB/14ms | £ 935 | 1045 | 1089 |
| 330MB/14ms | £ 1335 | 1445 | 1489 |

## 486SX-20 £829

•80486SX-20 Processor •Optional 128K Cache RAM •8/20MHz switchable •4MB RAM on-board expandable to 16MB •Co-Processor socket •Landmark rating 66.8MHz

| Monitor<br>Resolution | 14" Mono Super VGA (1024x768) | 14" Colour Super VGA (1024x768) | 14" Colour XGA Multiscan (1024x768-N.I.) |
|---|---|---|---|
| No HDD | £ 909 | 1019 | 1065 |
| 40MB/28ms | £ 1035 | 1145 | 1189 |
| 105MB/17ms | £ 1135 | 1245 | 1289 |
| 210MB/14ms | £ 1235 | 1345 | 1389 |
| 330MB/14ms | £ 1635 | 1745 | 1789 |

## 486EISA-33 Cache £1749

•80486DX-33 Processor •256K Cache RAM •8/33MHz switchable •4MB RAM on-board expandable to 32MB •Weitek socket •Landmark rating 162MHz

| Monitor<br>Resolution | 14" Mono Super VGA (1024x768) | 14" Colour Super VGA (1024x768) | 14" Colour XGA Multiscan (1024x768-N.I.) |
|---|---|---|---|
| No HDD | £ 1829 | 1939 | 1985 |
| 40MB/28ms | £ 1955 | 2065 | 2109 |
| 105MB/17ms | £ 2055 | 2165 | 2209 |
| 210MB/14ms | £ 2155 | 2265 | 2309 |
| 330MB/14ms | £ 2555 | 2665 | 2709 |

## Aries System Options

| | |
|---|---|
| • Toshiba KT3301 FAST CD ROM Drive (internal) | add £329 |
| • Panasonic CD ROM Drive | add £299 |
| • CD Bundled software (World Atlas, Games, I. Encyclopedia) | add £49 |
| • Additional 3.5" 1.44 or 5.25" 1.2M Drive | add £45 |
| • Additional 1MB RAM Module | add £29 |
| • Super VGA Card with 1MB RAM | add £50 |
| • Aries Windows Accelerator Card (Increase speed by up to 200%) | add £199 |
| • IDE Hard Disk Cache Controller ISA (0.3ms access speed) | add £199 |
| • Aries Sound Booster Card with MIDI & J'Stick interface | add £129 |
| • PC Workstation Trolley | add £85 |

## Aries Monitor Options

Note: The additional amount is to be added to the 14" Colour XGA Multiscan Monitor System price.

| | |
|---|---|
| • **14" Alphascan Plus 0.28mm** (1024x768 Non Interlaced) | add £49 |
| • **14" MC3000 Monitor 0.28mm** (1280x1024 Non Interlacecd) | add £99 |
| • **14" MC4000 Trinitron 0.25mm** (1280x1024 Non Interlacecd) | add £199 |
| • **17" MC5000 Monitor 0.26mm** (1280x1024 Non Interlacecd) | add £599 |
| • **20" Aries Alphascan+ 0.31mm** (1280x1024 Non Interlacecd) | add £699 |

(MC = Advanced Microprocessor Controlled)

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# Despite appearances, we offer you very little choice.

At Watford Electronics, we will only offer any product when we are convinced that we can sell it at the best price with the right level of support. It's an approach that our thousands of customers appreciate, for we are now celebrating twenty years in the business. So as you look through all the lists of items that follow and discover how competitive we are, you'll discover just how little choice you have. **You simply must call us.**

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## Aries 14" Mono Monitor

This State of the Art monitor has a chemically etched, non-glare flat screen, IBM, MDA & Hercules graphics compatible, high resolution (720 x 350 lines).

- **ArM1000A** – High Res' Amber **£68**

## Aries 14" VGA Monitor

**Monochrome:** 14" Flat Screen, Non-Glare, High Resolution paper white, VGA Monitor. Caters for CGA, EGA, VGA. Supplied complete with Swivel base.

- VGA Mono Monitor **£85**

**Colour Super VGA:** The state of the art, flat screen, colour monitor supporting a high resolution of up to 1024 x 768. Complete with Swivel base.

- Super VGA Colour Monitor **£198**
- Super VGA Card (8/16 Bit) **£49**
- Super VGA Monitor + Card **£239**

## Aries Multiscan Monitors

### Alphascan Plus

This new 14" colour monitor provides automatic adjustment for horizontal frequencies between 50 and 90 Hz. This, combined with its 0.28mm dot pitch tube and anti-glare treatment, gives sharper text and graphics resolution up to 1024 x 768 on a non-interlaced flicker free display (XGA standard). Operation is made simply by use of the front mounted controls for comfortable and easy setup. Supplied with tilt and swivel base.

Aries Alphascan 17 Plus **£325**

17" Flat Screen Monitor specification as above **£695**

### Aries MC3000

Watford Electronics' new microprocessor controlled 14" colour monitor brings a new concept in display technology to the PC world. Now you can set up to 8 different optimum screen displays using push-button controls for vertical and horizontal size and position. The monitor will then select your ideal settings when displayed screen resolutions are changed.
Flicker free operation at up to 1280 x 1024 resolution is the norm with its support for 30 to 64KHz horizontal frequency and 50 to 120Hz vertical frequency. Its other features include 0.28mm dot pitch tube, push button controls and removable tilt and swivel base.

"...provides unquestionable picture quality at VGA...it supports VGA in 1024 x 768 in non-interlaced mode."
"The huge bandwidth of the monitor means that it should be able to support display modes not even invented yet, certainly XGA."
"In the not too distant future, monitors with this level of sophistication are going to become commonplace for PC users. But for the moment, the Aries MC3000 is state-of-the-art."
Computer Shopper Nov 1991

**Aries MC3000** **£395**

## Multiscan Colour Monitors

- Eizo 9060S **£380**
- Eizo 9070S **£569**
- NEC 3FG **£370**
- NEC 4FG **£465**
- NEC 5FG **£850**
- NEC 6FG **£1525**
- Taxan 770LR **£362**
- Taxan 775 **£362**
- Taxan 795-PC **£399**
- Taxan 875 **£685**
- Taxan Viking II **£1179**
- Taxan 1000 20" **£1210**

## Hewlett-Packard Printers

- Desk Jet 500# **£285**
- Paint Jet Col **£430**
- Paintjet XL **£1045**
- HP Think Jet **£265**
- Quiet Jet + **£384**
- DJ 500Col **£475**

# Now 3 years extended Parts & Labour warranty

- Paintjet Cartridges Black **£19** Col **£25**

### Desk Jet 500 Accessories

- DJ 500 Ink Cartridge **£14**
- DJ 500 256K RAM Cartridge **£129**
- DJ Epson FX Emulation Cartridge **£59**
- DJ IBM Proprinter Em C'tridge **£59**
- DJ 500 Wordperfect Cartridge **£89**
- Desk Jet Unlimited (Book No VAT) **£19.75**

## Canon Bubblejet Printers

| | Printer | CSF | D'ble Bin | Ink Cart |
|---|---|---|---|---|
| BJ10EX | £185 | £43 | - | £16 |
| BJ300 | £335 | £88 | £65 | £12 |
| BJ330 | £380 | £110 | £79 | £12 |

- Spare Battery pack for BJ10EX **£33**

## Citizen Printers

- 120D Plus **£100**
- 124D **£145**
- 224 **£185**
- PN-48 **£209**
- Swift 9 **£129**
- Swift 24E **£249**
- Swift 24X **£299**

- Swift 24 Colour Option **£32**
- Swift 24 Ribbons: Black **£4** Colour **£13**

## Star Printers

- LC15 **£173**
- LC20 **£100**
- LC24-10 **£135**
- LC24-15 **£245**
- LC24-200 **£165**
- LC24-200C **£203**
- LC200 Colour **£144**
- StarJet-48 360 **£175**
- XB24-200 Col **£295**
- XB24-250 Col **£355**
- XB24 Col Kit **£29**
- ZA-200 Colour **£234**
- ZA-250 Colour **£299**

### Cut Sheet Feeder

- LC10/24-10/200 **£65**
- XB24-10 **£80**
- LC15/LC24-15 **£125**
- XB2415 **£139**

### Serial Interfaces

**8k Serial** LC10; LC10 Colour; LC15;LC24-10;LC24-10; LC24-15; LC-200; LC24-200 **£55**

### Buffers

- 32K Ram Card for LC/XB24-10; 15 & 200 **£55**

### Ribbons

- LC10; LC10-11; LC15 Blk **£4** Col **£6**
- LC-200; LC24-200 Blk **£5** Col **£12**
- XB24-10; XB24-15 Blk **£5** Col **£12**

## Printer Ribbons & Various Dust Covers

| Type | Ribbons | Dust Covers |
|---|---|---|
| IBM PCs pair | - | £7.75 |
| DMP2000/DMP4000 | £3.75 | £4.85 |
| RX/FX80/85/800/MX80 | £2.95 | £4.95 |
| RX/FX100/1000 | £3.95 | - |
| Kaga/Taxan KP810/815 | £3.25 | £5.00 |
| EX/LQ500/550/800/850 | £3.50 | £6.00 |
| EX/LQ1000/LQ2500 | £4.00 | £5.50 |
| LX80/86/400/800/850 | £3.00 | £5.00 |
| NEC P2200 | £6.00 | £5.00 |
| Panasonic KX1080/81 | £2.95 | £4.75 |
| Star LC10/NL10 | £4.00 | £5.00 |
| Star LC24-10 | £2.95 | £6.00 |

Our attractive dust covers are manufactured from translucent PVC. The seams are stitched and edges are taped to prevent splitting due to continuous use.

## Fujitsu Printers

- DL900 24pin 110 columns **Call**
- DL1100 24pin 110 columns **Call**
- DL1200 24pin 136 columns **Call**
- DL3600 24pin 136 columns **Call**
- B200 ink jet 80 columns **Call**

## Laser Printers

All laser printers include 12 months on-site maintenance

- Canon LBP-4 4ppm **£575**
- Canon LBP-8 IIIR 8ppm **£1440**
- Canon LBP-8 IIIT 8ppm **£1340**
- Epson EPL-4100 **£550**
- Epson EPL-7500 PS 6ppm **£1160**
- HP Laserjet III 8ppm **£1015**
- HP Laserjet IIID 8ppm **£1720**
- HP Laserjet IIIP 4ppm **£695**
- HP LJ III Si 2MB RAM 16ppm **£2525**
- Panasonic KX-P4420 8ppm* **£620**
- Panasonic KX-P4430 * **£999**
- Panasonic KX-P4450i 11ppm* **£1125**
- Panasonic KX-4455 PS 11ppm* **£1450**
- Star LP-4 Post Script **£779**
- Star LP-4 4ppm **£565**
- Star LP-8 II (2 Bin) 8ppm **£1195**
- Star LP-8 III 8ppm **£910**
- Star LP-8 8ppm Star (post)script **£1140**

* 2 years on-site warranty

### Laser Toners

- Canon 2,3&4 **£46**
- Epson GQ **£12**
- EPL 7100 **£82**
- Star LP-8 **£56**
- Qume Crystal (3) **£58**
- KX-P4420/50 **£19**
- HPIII/D, III/D. **£48**
- HP IIP, IIIP **£42**
- NEC S60/60P **£75**
- IBM 4019 **£142**

### Laser RAM Upgrades

- IIP & III 1MB **£56**
- IIP & III 2MB **£88**
- II & IID 1MB **£64**
- II & III 4MB **£99**
- II & III 4MB **£146**
- Star LP8 1M **£139**
- EPL7100 512K **£39**
- GQ5000 512K **£42**
- KX4420/50 1M **£75**
- P4420/50 2M **£115**
- P4420/50 4M **£195**
- Star LP8 2M **£275**
- Canon LBP4 1M **£105**
- Canon LBP8-2 2M **£125**

### Jetpage Postscript Cartridge

- HP IIP/III **£229**
- IID & III **£235**

### Various Add-Ons

- Laserjet Appletalk Interface **£135**
- HP Adobe Postscript **£399**
- Pacific Page Postscript **£259**
- HP Premier Font Collection **£28**
- Laserjet Various Font C'tridges **from £45**
- Jetfont Superset for II & IID **£127**
- Canon LPB8 III Adobe PS Interface **£579**
- HP IIP Wordperfect Font Cartridge **£98**

## NEC Pinwriter Printers

- P20 **£180**
- P30 **£240**
- P60 **£325**
- P70 **£419**
- P90 **£639**

## Panasonic Printers

- KX-P1123 **£130**
- KX-P1124i **£173**
- KX-P1170 **£100**
- KX-P2624# **£295**
- KX-P1624 **£272**
- KX-P1654# **£335**
- KX-P1695 **£272**

#Price includes 12 months on site warranty

### Panasonic Cut Sheet Feeders

- **P36** P1124/24i **£79**
- **P37** P1123/70/80 **£69**
- **P38** P1624/95; P2624 **£129**

### Panasonic Printer Buffers

- **P12** 4k Buffer Board for KX-P1081 **£55**
- **P14** 32k Buffer for P1123/24/70/80; P1540/92/95; 1624/54/95 **£16**

### Panasonic Serial Interfaces

- **P17** P1081/1592 **£32**
- P19 P1124/1180 **£49**

### Original Panasonic Ribbons

Guaranteed to last 3 million characters

- **P110** for KX-P1081,1592,1595 &1695 **£6**
- **P115** for KX-P1180 **£6**

### Panasonic Ribbons cont'd

- **P145** for KX-P1123/24 **£6**
- **P140** for KX-P1540 **£8**
- **P155** for KX-P1624 **£8**
- Colour Ribbons for KX-P1081, 1592, 1595 & 1695 Brown, Blue or Red **£9 each**

## Epson Printers

- DFX5000 **£1079**
- DFX8000 **£1940**
- EX1000 Col **£428**
- FX850 **£265**
- FX1050 **£340**
- LQ200 **£164**
- LQ450 **£165**
- LQ570 **£205**
- LQ860 Col **£445**
- LQ870 Col **£355**
- LQ1010 **£270**
- LQ1050+ **£207**
- LQ1060 Col **£595**
- LQ1070 **£315**
- LQ1170 **£437**
- LX400 **£101**
- LX850+ **£140**
- SQ850 **£432**
- SQ2550 **£625**

### Cut Sheet Feeders for

- LX400/800/850/LQ400/500/550 **£69**
- EX800/FX800/850/LQ800/850 **£130**
- FX/LQ1000/1050/SQ850 **£159**
- LQ255 **£176**
- SQ2550 **£390**

### Tractor Feed for

- LQ800 **£44**
- LQ1050/FX1050 **£85**
- LQ850/FX850 **£69**
- LQ2500 **£90**
- LQ2550 **£90**

### Accessories

- EX800/1000 Colour Option **£55**
- EX800/1000 Colour Ribbon **£18**
- LQ2500 Colour Option **£65**

### Epson Printer Interfaces

All these interfaces fit inside the printer

- RS232 **£28**
- RS232 + 2k Buffer **£52**
- IEEE 488 **£95**
- RS232 + 8k Buffer **£75**

## Printer Leads

- IBM Parallel Lead 2m **£4**
- IBM Parallel Lead 5m **£10**
- IBM Parallel Lead 10m **£15**
- Double ended 36 way Centronics lead 4' **£7**
- Double ended 36 way Centronics lead 6' **£9**
- RS232 lead (various) **POA**
- IBM Keyboard extension lead coiled **£5**

SINCE 1972 20 YEARS OF SERVICE

## Universal Printer Sharers

Connect up to 5 micros to 1 printer or 5 printers to 1 micro with our combined Sharer/Changerswitch boxes.

### Standard Low Cost Sharers

| Connects | Serial | Parallel |
|---|---|---|
| 2 to 1 | £10 | £11 |
| 3 to 1 | £13 | £14 |
| 4 to 1 | £16 | £17 |

### Professional Sharer Units

| Connects | Serial | Parallel |
|---|---|---|
| 2 to 1 | £17 | £18 |
| 3 to 1 | £22 | £25 |
| 5 to 1 | £34 | £38 |

## Handy Printer Switch

A 2 way printer switch can be attached to the micro or monitor for ease of use.
Centronics **£18** Serial **£17**

## Auto Printer Sharer Switch

| Connects | Serial | Centronics |
|---|---|---|
| 2 to 1 | £38 | £40 |
| 4 to 1 | £59 | £59 |
| 8 to 1 | - | £89 |

## 256K Multi Spooler

These Auto Centronics Printer Sharers have built-in 256K of Printer Buffers. They can be used as Auto Sharers, Printer Buffers or both.

- 2 in/2 out **£135**
- 4 in/2 out **£145**
- 8 in/1 out **£199**

(Cables for all printer switches are extra @ £6 each. Please specify the type required when ordering.)


*24-HOUR Credit Card ORDERLINE*
**0923 233383 or 250234**


# Watford Electronics

A member of the Jessa group of companies

## Compact Convertor Units

- Serial to Parallel £36
- Parallel to Serial £37

## Listing Paper (Perforated)

- 1,000 Sheets 9.5" x 11" Fanfold £7
- 2,000 Sheets 9.5" x 11" Fanfold £11
- 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold £21
- 1,000 Sheets 15" x 11" Fanfold £9
- 2,000 Sheets 15" x 11" Fanfold £16
- 1,000 Sheets true A4 Fanfold Paper 70gms £11
- 2,000 A4 Fanfold Paper £19
- Teleprinter Roll (Econo paper) £4

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached.)

## Printer Lables

(On continuous fanfold backing sheet)

- 1,000 90 x 36mm (Single Row) £6.00
- 1,000 90 x 36mm (Twin Row) £6.25
- 1,000 90 x 49mm (Twin Row) £7.50
- 1,000 102 x 36mm (Twin Row) £6.75

### Laser Printer Labels on A4 Sheets

- 3750 - 70 x 29mm (3 Rows) £13.50
- 3000 - 70 x 37mm (3 Rows) £13.25
- 2625 - 70 x 42mm (3 Rows) £13.00

## Maths Co-Processors

- 8087-5MHz £50
- 8087-8M £73
- 8087-10M £95
- 80287-8 £40
- 80287-10 £45
- 80287-12 £46
- 80287-20 £50
- 80387-16 £119
- 80387-20 £99
- 80387-25 £125
- 80387-33 £119
- 80387-40 £164
- 80387SX-16 £69
- 80387SX-20 £79
- 80387SX-25 £92

## Books (No VAT)

Carriage on books varies between £2 to £3.50, depending on their weight

- 1-2-3 Mastering - 2nd Ed £20.95
- 1-2-3 Quick Ref £8.45
- 1-2-3 Using - Release 2.2 £25.95
- Accountancy software in Business - Using £14.95
- Advance C Tech & Application £19.95
- Aldus Pagemaker £27.95
- Amstrad 9512 - Using the £10.95
- Amstrad Basic 2 - User Guide £9.95
- Amstrad Tech Manual for 1640 £19.95
- Assembley Language Quick Ref £20.95
- Autocad 4th Ed - Mastering £31.50
- Autocad - Inside 6th Ed £36.95
- Autocad - Inside Release 11 £32.45
- Autocad Mastering Through Ref II £28.85
- Business Companion on the 1640 £12.95
- C - Introducing £12.95
- C- Programming Language 2nd Ed £26.95
- C - Teach Yourself £19.95
- Clipper - Using 2nd Ed £27.95
- Computer Users Dictionary £9.95
- Coral Draw 2nd Ed - Mastering £25.50
- Coral Draw made easy £24.95
- Coral Draw v2 Quick Ref £8.45
- dBase IV - Handbook £19.95
- dBase 3/4 Complete Ref £27.45
- Deskjet Unlimited £19.95
- DOS & BIOS Function - Quick Ref £7.95
- DOS Power tools 2nd Ed POA
- Excel for ++++ - Quick Ref £8.95
- Fax Management - with £7.95
- Framework 111 - Mastering £24.50
- GW BASIC Users Guide & Ref £12.95
- Hard Disk Instand Ref £10.95
- IBM PC & PS/2 3rd Ed - inside the £21.70
- IBM PC AT - Inside the £21.70
- IBM PS/2 Handbook £19.95
- Microsoft GW BASIC £17.95
- Microsoft Windows - Ilustrated £21.95
- Microsoft WORD 5.5 - Using £20.45
- MS DOS Bible 3rd Ed £24.95
- MS DOS First Book £15.50
- MS Windows 3 2nd Ed - Using £22.95
- MS-DOS for Beginners £17.45
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- MS-DOS - Running 4th Ed £19.95
- MS-DOS - Supercharging 2nd Ed £17.95
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- MS-DOS - Using £29.95
- MS-DOS 5 Using Handbook £19.95
- MS-DOS 5 - Upgrading to £14.95

## Books Cont'd (No VAT)

- MS-DOS 5 - Quick Start £18.45
- MS-DOS 5 - Using £29.95
- MS-DOS 5 - Using 2nd Edition £22.95
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- Networking Personal Computers 3rd Ed £-
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- Novell Network - Mastering £27.95
- Novell Network - The ABC of £21.95
- Novell Network - Using £27.45
- Pagemaker - Using £22.95
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- PC Tools - Quick Ref £8.45
- PC-DOS Using 2nd Ed Ver. 3.3 £20.45
- PC-DOS Using 3rd Ed £21.95
- PCs & Compatible for Beginners £17.95
- Programming Guide to EGA & VGA Cards £25.95
- Quattro - Mastering Pro 3 £21.95
- Quattro Pro Quick Ref £8.45
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- Symphony 4th Ed - Mastering £24.95
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- Symphony - Using Special Ed £27.45
- Teach Yourself C £19.95
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- Ventura - Instant Reference £10.95
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- WORD for Windows Made Easy £15.95
- Wordperfect for Beginners £17.45
- Wordperfect 3rd Ed - Using £20.45
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- Wordperfect 5.1 Quick Start £18.45
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- WordStar Release 5.0 - Mastering £20.45
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## Hard Disk on Cards

3.5" HD on a controller card. "Simply Plug and Play". For Amstrad 1640 & XT compatibles.

- **WD-XT** 20MB £129
- **WD-XT** 30MB# £149
- **WD-XT** 40MB £189

# Now supplied with ViewMax - the hard disk management program.

## Hard Disk (Bare Units)

- **WEHD20** 21 MB Hard Disk £79
- **WEHD30** 30MB RLL Hard Disk £119
- **WEHD40**/28mS 42MB HD including partitioning software £179
- **WEHD65** 65MB HD RLL £185

## Disk Controller Cards

- **WEXT100**C XT Hard Disk Controller card and cables £29
- **WEXT200**C/RLL XT Hard Disk Controller card and cables £29
- **IDE AT** - 2HD/FDC/Parallel/2 Serial Games port for AT £18
- **FDC-Plus** PC XT Controller card to interface H/L Density 3.5" or 5.25" FD's £25
- **FDC-4** PC XT Controller card to interface up to a 4 H/L Density 3.5" or 5.25" FD's £35
- **AT** Embedded Drive Adaptor 2 x FDD/HDD only £9

## Hard Disk Kits

- **WEHD20**(KIT) 21 MB HD with XT-Amstrad Controller + Cables £99
- **WEHD30**(KIT) 32 MB HD with XT/Amstrad Controller and Cables £179
- **WEHD40**(KIT) 42 MB HD with XT/Amstrad Controller and Cables £199

## Floppy Disk Drives

- **UC200** 5.25" 360K 48tpi Double Sided Disk Drive £35
- **UC600** 5.25" 1.2M 96tpi Double Sided High Density, Disk Drive £38
- **UC35/4** 3.5" 720K Drive £34
- **UC35/6** 3.5" 1.44M Drive £35
- 5.25" Fixing kit for 3.5" Drives £8

## Tape Streamers

- **WE 5000** - Tape for XT & AT. 60MB external kit with software, short controller, cable and documentation. Backs up 60MB in less than 12 minutes. £449
- **WE 2000** - Low cost internal Tape Streamer. Up to 120MB capacity. inc Software £165
- **WE 3000** - as above up to 250MB capacity £259
- External Case, PSU & Lead for above £79

## PC External Drives

For 1640, IBM PC & Compatibles. Supplied complete with case, cables & Power Supply Unit. Ready to plug in.

- PCS-3L5 3.5" - 720K Drive £75
- PCS-3H5 3.5" - 1M44 Drive £85
- PCS-5L2 3.5" - 360K Drive £69
- PCS-5H2 3.5" - 1M2 Drive £89

N.B. Not all XT compatible micros can accept the high density drives.

## Large Capacity Hard Disk Drive

### SCSi

| | | | |
|---|---|---|---|
| 105MB | 3.5" | 18mS | £220 |
| 180MB | 3.5" | 17mS | £545 |
| 330MB | F/H | 18mS | £725 |
| 670MB | F/H | 16mS | £1395 |

### AT IDE Drives

| | | | |
|---|---|---|---|
| 44MB | 3.5" | 28mS | £125 |
| 100MB | 3.5" | 17mS | £219 |
| 200MB | 3.5" | 16mS | £370 |
| 337MB | H/H | 16mS | £725 |

## HD Controller Cards

- SCSI Hard Disk Controller Card £15
- ESDI Hard Disk Controller Card £165

## P C Spares

- 101 Keys Pro Keyboard for XT/AT £27
- 150W Power Supply (XT size) £40
- 200W Power Supply (AT size) £55
- Main Casing for PC XT £25
- Main Casing for PC AT £32

## Memory

- 4164-10 £1.55
- 4464-10 £3.50
- 41256-10 £1.50
- 4256-8
- 1MB-10 DIL £4.50
- 1MB ZIP £4.50
- 256K x 4 ZIP £4.50 £2.00

## Simm & Sips

- 256K x 9-10 £14
- 256K x 9-8
- 1MB x 9-8
- 1MB x 9-10 £36 £14.50 £39

## Add-On Cards

- EGA Card, 256K RAM, compatible with CGA, & EGA £49
- XT/Advance Multi I/O Card: Dual FDC, Real Time Clock/Calendar, Serial/Parallel/Games Card £18
- Second Serial Kit for above £6
- XT/AT-Multi I/O Card: Serial Parallel Games Card £9
- AT-Multi I/O Card: Twin Serial/Parallel/Games £12
- XT/AT - Joystick/Games Card £7
- Dual Serial (RS232) Card £7
- Parallel Printer port Card £7

## Motherboards

Supplied complete with manual/driver software

- 286-20MHz Motherboard £89
- 386-256MHz Motherboards £149
- 486-20MHz Mboards/opt Cache £POA
- 486DX-33MHz Mbds/opt Cache £POA
- 486-50MHz Mboards/opt Cache £POA

## Ethernet Cards

8 bit with remote boot ROM, NE1000 Compatible £68

16 bit with remote boot ROM, NE2000 Compatible £68

## PC Software

Please specify Disk size required (3.5"5.25")

- Autoroute Plus v4 £192
- Autoroute Express GB £37
- Autosketch v3 £64
- Clipper v5 £295
- Coral Draw v2 £230
- D/Base III+ £339
- D/Base IV £348
- Dataperfect £233
- Datatalk v4 £82
- Desktop for Windows £57
- Dexpress £195
- Data Ease £380
- Display Writer v5 £245
- Designworks £99
- DR DOS v6 £44
- Draw Perfect £249
- Excel for windows £POA
- Foxbase £182
- Grammatik for Wordperfect £45
- Haward Graphics v3 £242
- iPhoto for Windows £49
- Laplink Pro £69
- Lotus 1-2-3 v3.1 £294
- Lotus 1-2-3 for Windows £294
- Lotus Freelance £245
- Lotus Symphony £360
- Microsoft Basic Compiler £195
- Microsoft C Compiler v6 £195
- Microsoft DOS v5.0 £49
- Microsoft Excel v3 £228
- Microsoft Pascal Compiler £126
- Microsoft Quick C v2.5 £45
- Microsoft Word v5.5 £230
- Microsoft Works v2 £84
- MS DOS 5 Upgrade £49
- MS Flight Simulator £26
- MS Quick Basic v4.5 £45
- MS Works for Windows £230
- MS Word for Windows £230
- Norton Anti-Virus £84
- Norton Backup £60
- Norton Commander v3 £63
- Norton Desk Top for Windows £69
- Norton Utilities v6 £89
- Norton Utilities & Backup £96
- Pagemaker v3 £255
- Pagemaker v4 £389
- Paradox 3.5 £349
- PC Tools v7 £70
- PC Tools Deluxe v7.1 £74
- PC Copy £45
- Quattro Professional £189
- Quattro Pro v3 £168
- QUM 386 v6 £49
- Sage Accountant £169
- Sage Bookkeeper £55
- Sage Cash Trader £60
- Sage Job Costing £112
- Sage Payroll II £112
- Smartware II system £398
- Supercalc v5.1 £79
- Timeworks DTP Publisher 2 £84
- TurboCad v1.8 £90
- Turbo C++ 2nd Ed £43
- Turbo Pascal for Professional v6 £117
- Turbo Pascal v6 £57
- Typographica Newsletter £59
- Ventura Publisher Gold £404
- Windows v3 £58
- Wordperfect v5.1 £159
- Word for Windows £249
- Wordperfect for Windows £197
- Wordstar v6 £198
- Wordstar for Windows £210
- XTree Gold £57

## Graphics Cards

- Mono Graphics Card (inc. Parl port) £12
- CGA Card - RGB Col and Mono with composite video (inc. parallel port) £32
- Paradise EGA Card with 256K RAM (CGA compatible) £45
- VGA Card - 8/16 bit with 256K RAM £39
- SuperVGA Card 8/16 bit 512K RAM £49
- SuperVGA Card 8/16 bit 1MB RAM £79

Continued overleaf →



In our never-ending quest for exciting new products at the right price, Watford Electronics are pleased to announce an exclusive UK marketing agreement with A4 Tech. These products offer our customers the latest and best in scanner and mouse technology. Low cost, high specification and ergonomic design combine to make A4 Tech peerless.

**All software supplied on 5.25" Discs. Please add £5 for 3.5" Disc**

## AM-5 Plus – PC Mouse

The vast selection of computer mice currently available will probably confuse your decision in choosing a good quality mouse for your PC system. Watford Electronics is pleased to announce the introduction of the ideal mouse, the AM-5 Plus.

**Features include:**

- Ergonomic design; fits comfortably in the palm of your hand creating virtually no hand or wrist fatigue.
- Selectable button operation; convenient switch selected options for two or three button mouse operation, allows the use of different serial mouse driver software in different applications.
- High quality opto-mechanical design software selectable dynamic resolution of 290-1450 dpi.
- Suitable for IBM XT/AT/386/486 & compatibles.

**Image 72+ Graphics Paint Software**

- Image 72+ – Powerful drawing and editing tools, including pencil, lines, circle, rectangle, eraser, airbrush, scissors, rotate, text and more.
- Will edit scanned images.
- Supports PCX, TIF, IMG, MSP and PUT file formats.
- Reads any ASCII text file format

P.S. AM5 Plus requires Hercules Mono, EGA or VGA display adaptor.

**Only £15**

Supplied complete with mouse holder, mat, and the powerful Image 72+ graphics package

## A4 Base II – Colour Image Database Software

Offers the most versatile and picturesque means of keeping track of your records of customers, products, people, places etc, combining text and high res colour graphics from scanned pictures, all on screen.

- Easy design and set up of data format
- Data entry and editing at any time
- Up to 256 colour images capacity
- Keyword search facility
- Data, pictures and graphics combined
- No programming skills required

**Only £39**

*(For minimum requirements see box on right)*

## The AC-4096 Colour Hand Scanner

The AC-4096 hand held scanner offers low-cost colour scanning facilities in conjunction with the powerful scanning and editing software suite provided.
The scanner can sense 4096 colours, but the software can be set to use a palette of any 256 out of 262,144 tints, hues and shades.
Picture contrast is switch adjusted, making for optimum performance scanning with most subject material. Used with the supplied fast-running machine code software, you can add that extra style and finesse to your DTP newsletters, business reports and presentations.

**Features:**

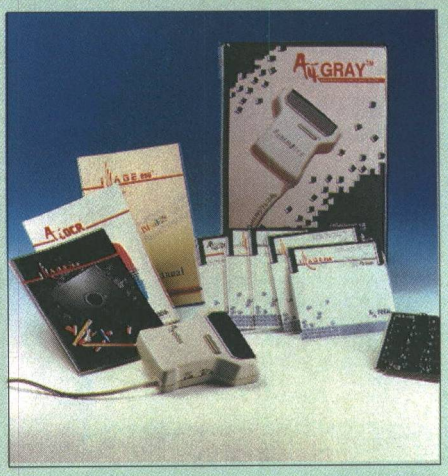
- Ergonomic design
- Comfortable feel and button positioning
- Convenient switch selection of contrast
- Scanning width 105mm
- High quality opto-mechanical design
- High friction precision rubber roller
- Suitable for IBM XT/AT/386/486

**Image 256 Scan Paint and Edit Suite**

- Real time scanning and display
- Multi-scan and Multi-merge utility
- Powerful drawing and editing tools
- Supports VGA adaptor based on (see below)
- Supports VMG, TIF, PCX, SCF, and GIF formats
- Drivers for dot matrix, H.P. Laser & Paintjet
- 256 grey scale image processing enhancement
- Can display 256 colours at once
- Scanned image slide show feature

**Only £215**

(Includes FREE A4 Base II Software)



## The AG-256 Grey-scale Hand Scanner

This hand held scanner uses the latest breakthrough in technology to distinguish between up to 256 levels of grey, giving extra sharpness and definition to your scanned images.
Previously, scanners were only able to scan 16 shades. The AG-256 can be switched between 2, 16 and 256 shades.
Resolution is switch selectable between 100, 200, 300 and 400 dpi, and picture contrast is dial adjusted, making for optimum performance scanning with most subject material.
Used with the supplied machine code software, you can add that extra style and finesse to your DTP newsletters, business reports and presentations.

**Features:**

- Ergonomic design
- Comfortable feel and button position
- Convenient switch selected options
- Scanning width 105mm
- High quality opto-mechanical design
- High friction precision rollers
- Suitable for IBM XT/AT/386/486

**Image 72+ Scanning and Painting Software**

- Scans images in 2 or 16 shades of grey
- Real time scanning and display
- Software adjustable brightness and contrast
- Multi-scan and multi-merge utility
- Powerful drawing and editing tools
- Supports PCX, TIF, IMG, MSP and PUT formats
- Supports Hercules, EGA and VGA High Res
- Supports Dot matrix, H.P. Paintjet & Laser

**Image 256 Scan Paint and Edit Suite**

- Features as for above Image 72 suite but . . .
- Scan images with 100, 200, 300 or 400dpi
- 2, 16 or 256 grey shades
- 256 grey scale image processing enhancement
- Supports VGA 640 x 480 high resolution
- Supports VMG, TIF, PCX, SCF and GIF formats
- Scanned image slide show feature

**A1 OCR Optical Character Recognition Software**

Scans text and converts it to computer readable files that can be loaded into wordprocessor or DTP package.

- Highly accurate and can be trained
- Reads mono-spaced and proportional typeset
- Font pattern styles can be created & appended

**Only £119**

P.S. To run A4 Base II – Colour Image Database Software, The AC-4096 Colour Hand Scanner and The AG-256 Grey Hand Scanner, your PC requirements are: Minimum 640K RAM – Hard Disc Drive (40Mb recommended) – VGA Card with 512K RAM based on any of these chipset: TRIDENT (8800/8900); TSENG LABS (ET3000/ET74000); WDC/PARADISE; GENOA; ATI (VGA Wonder); ZYMOS; Chips and Technology.



## A4 Tech Products

- **AM-5 Plus PC Mouse Package** **£15**

High specification 290-1450 dpi resolution mouse with 600mm/S tracking speed, with Image 72 Paint software for EGA & VGA and mouse pad.

- **AG-256 Grey Hand Scanner** **£119**

High resolution switch selectable from 100-400 dpi hand held scanner. Selectable scanning of 2, 16 and incredible 256 grey shades with dial adjusted contrast for optimum performance. Supplied with Image 72 and Image 256 paint packages for EGA & VGA. Also supplied with the AG-256 is the incredible OCR Optical Character Recognition software package to convert scanned text images into ASCII text files.

- **AC-4096 Col Hand Scanner** **£215**

As above with 105mm scanning width but with selectable palette for 256 out of 4096 sensed colours. Full software control of colour hue, saturation and value provided with Image 72 mono and Image 256 colour paint packages for EGA & VGA.

**Jan 1992 PC Plus Value Verdict** ■■■■□

*"... The A4 is above average in terms of image quality... operation is remarkable straightforward... excellent results can be achieved. Overall this device can be recommended in comparison with the many other scanners I've tried..."*

- **A4Base II Col Image Database Software** **£39**

Versatile and picturesque method of storing and retrieving scanned colour images. Combines text and graphics from images on screen. Up to 256 colours images capacity – ideal for slide shows.

## CD ROM

Now is the time to buy a CD-ROM Drive. The Toshiba CD-Rom is the latest in compact disk technology using Toshiba KT-3301BA drives – the fastest on the market. Providing access to data in as little as 325ms from up to 683 Megabytes of information per disk at up to 1.5M per second, the Toshiba CD-ROM is your gateway to a wealth of knowledge and information.

Toshiba CD-ROM Drive, Internal **£369**
External Drive, inc. power supply and casing **£459**

Introductory software package worth over £400 including World Atlas, TIME History and the CD-Games Pack (when purchased with drive) **£59**

**Goldstar CD-Rom Drive**

The Goldstar GT2000 CD-Rom is an external drive, at less than the price of some internal drives! Bundled with the: The Times, Mammals Illustrated Encyclopaedia, and World Atlas CD-ROMs, and 500ms average access time.

Introductory Offer **£339**

**Panasonic CD-Rom Driver (Fast)**

Low cost, internal CD ROM drive with capacity of over 500MB of storage and access speed of 390 milli-seconds. Ideal for use with Aries Sound Booster Pro or the Sound Blaster Pro Cards **£339**

## Icontroller

Escape the mousetrap! The Icontroller is the ideal solution for those who want a mouse, but do not have the surface space to use one! The Icontroller is a joystick that thinks it's a mouse. It may be attached to the side of the keyboard, and features fingertip cursor control, dual cursor speed control, and three mouse buttons (Microsoft or Mouse Systems compatible). Includes storage case, desktop PC extension cable, 9 to 15-pin converter, and software drivers. Escape the mousetrap!

Icontroller **£59**

## Sound Cards

- Aries Sound Booster Card **£99**
- Aries Sound Booster Pro Card **£169**
- Sound Blaster Card v2.0 **£89**
- Sound Blaster Card Pro Card **£175**
- MCA Sound Booster Card **£159**
- Aries High Quality Stereo Speakers **£89**

(Write in or call for further information)

## Genius Mouse

- **GM-220P** New low cost mouse for PS/2 and Notebook PCs. Supplied with Driver software & manual **£15**
- **GM-D320** 200-800 dpi A low cost mouse for XT/AT. Supplied complete with Driver Software and manual **£15**
- **GM-6000** 350-1050 dpi **£19**
- **GM-F302** 350-1050 dpi X-Y movement, 2-3 Button operation **£25**
- **GM-F303** 350-1050 dpi as above supplied with PS/2 adaptor and Cas CAD software **£33**
- **GM-W220** State of the art Infra red cordless mouse, ergonomic with a built in charger and 2 rechargeable batteries **£45**
- **GM-M330** 30-30,000 dpi another state of the art Optical mouse with Cas CAD I software **£55**

N.B. Except for GM D220P & GM D320 all other mouse are supplied with mouse mat, mouse holder DR Halo software, Genius menumaker and operating manuals.
Mouse software is supplied on 5.25" discs, software on 3.5" discs £5 extra

## Genius Handy Scanner

- **GS-4500** Handy scanner is supplied complete with OCR & Scan edit softwares **£79**
- **GS-B105G** True 64 Grey level & 256 VGA grey mode. Ideal for 386 system **£125**

(N.B. Not compatible with Amstrad 1512.
All Software on 5.25" disks. For 3.5" disks please add £5).

## Genius (A4) Flatbed Colour Scanner

NEW – Low cost A4 flat bed colour scanner with maximum resolution of upto 600dpi and offering upto 16.7 million colours. Supplied complete with Windows version of Photoshop, PC controller card and comprehensive user guide.

Introductory offer **£895**

(Please specify 5.25"/3.5" version required).
*Require Windows 3.x to operate

## Genius Tablets

These extremely versatile, multifunction, top quality graphic tablets include both tablet and mouse functions. Compatible with PC XT, AT and PS/2

- **GT1212B** 12"x12" includes a 4 button puck **£149**
- **GT1812** 18"x12" includes a 3 button stylus **£229**
- **GT909** 9"x9" includes a 3 button stylus **£89**

Above tablets are supplied with AutoCAD template, Dr Genius software & operating manuals. Software on 5.25" discs

- Spare Stylus for GT-1212 **£15**

## Genius TrackBall

- **GK-T320** TrackBall **£39**

**Please telephone for further information on any of the Genius products**

## HOW TO ORDER

**By phone: To discuss your requirements call**

**0923 237774**

**By post to:**
**250 Lower High St.**
**Watford WD1 2AN**

- Official orders accepted from government, educational establishments and PLCs.
- Showroom and shop hours: 9am to 6pm, Monday to Saturday. Late night Thursday until 8pm. Free customer car park.
- VAT: UK customers please add 17.5% VAT to value of order and carriage.

CARRIAGE: Unless stated otherwise, minimum £3 on all orders. £4 on larger items. Delivery of PCs and other bulky items: £7 via Securicor (UK mainland only). Overseas deliveries charged at cost.

## Mains Distribution Socket

4 way top quality mains trailing sockets. Supplied wired up with mains plug ready for use. Can be screwed to floor or wall if required. Very useful for tidying up all the mains leads from your peripherals. **£9.50**

**Aries Spike Cleaner Unit**

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete Computer/Hi-Fi Systems. **£16**

## Plotters

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| DXY1100 | £495 | DXY1200 | £625 |
| DXY1300 | £825 | DXY2500 | £2345 |
| DPX3500 | £2995 | Sketchmate | £310 |
| Roland plotter Fibre Tip Pens | | | £7.50 |
| HP 7440A | £415 | HP 7475A | £592 |

FREE On-site Maintenance on all Roland Plotters (UK mainland only.)

## 'Commander' PC Joystick

Commander Joystick is ideal for Games and Drawing programs. Features:

- Direct connection to a Joystick port.
- Fully compatible with all PC Joystick controlled games programs.
- Switchable springs allow selection of floating or centring operation.
- Trim adjusters for both X and Y axes for fine centre adjustment.
- Convenient stick mounted fire button with additional base buttons.

**Commander PC Joystick: £16**

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# Watford Electronics

*Jessa group of companies – Established 1972*

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# There's an electronic Aladdin's Cave of shareware and PD programs . . . just waiting to be explored!

Due to the tremendously high demand, the price of the acclaimed EuroLink modem has been reduced to £149 – a reduction of £80 on the previously advertised price of £229.

This means it is now even better value – still with the same full specification and all the advanced features of more expensive modems.

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Use the EuroLink modem as your own complete communications centre – to send fax, telex and electronic mail messages, keep up to the minute with the latest news, sport, weather and financial markets, or even roam the world searching and retrieving data from the leading electronic libraries.

Or you can simply explore some of the many hundreds of amateur bulletin boards all over Britain where people with the same computer as yourself, and with similar interests, help each other with practical ideas and advice that you wouldn't be able to find any other way.

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*Previously advertised at £229*

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**With your EurolLink modem comes FREE membership of the world's biggest online information service, CompuServe. You'll get your own personal ID number and password, the ideas-packed CompuServe magazine, and $15 of FREE usage credit.**

**One of the many attractions of CompuServe is its vast library of nearly 30,000 shareware and PD programs you can download directly into your own computer.**

**And CompuServe, plus your EuroLink modem, also turns your computer into a 24-hour, seven-days-a-week fax and telex machine!**

## What the EuroLink modem offers

- *Four speeds – including 2400 baud*
- *Intelligent microprocessor controlled*
- *Autodial, Autoanswer, Auto redial*
- *Automatic baud rate scanning*
- *Auto terminal baud rate sensing*
- *Easy-to-understand built-in Help pages*
- *32-number telephone directory*
- *Six progress-checking LED indicators*
- *Software-controlled pulse/tone dialling*
- *External plug-mounted power supply*
- *Built-in 'watchdog' circuitry*
- *Internal loudspeaker*
- *Fully Hayes compatible*
- *Fully BABT approved*

APPROVED for connection to telecommunication systems specified in the instructions for use subject to the conditions set out in them.

## ORDER FORM

Please send me a EuroLink modem with power supply and lead to connect to my computer for the special offer price of £175.08 (incl. VAT and p+p). Also send me my FREE CompuServe membership pack.

I wish to pay by: ☐ Cheque/Eurocheque enclosed made payable to EuroLink

☐ Access/Mastercard/Eurocard/Barclaycard/Visa/Connect Expiry date /

No. | | | | | | | | | | | | | | | | |

Name ..... Signed .....

Address .....

..... Post Code .....

Daytime telephone number in case of queries .....

My computer is ..... *State make and model*

**Send to: EuroLink, Europa House, Adlington Park, Macclesfield SK10 4NP.**

**PHONE ORDERS: 0625 878888. FAX ORDERS: 0625 879966**

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**ALL SOFTWARE UK SOURCED**
**Please specify 3.5" or 5.25" versions when ordering**

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| 4 IN 1 BUSINESS PACK | £103 |
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| STERLING FOR WINDOWS | £198 |
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| ELECTRICAL SYM. LIBRARY. | £75 |
| ARCHITECTURAL SYM. LIBRARY. | £75 |
| INT. ARCHITECTURE LIBRARY. | £75 |
| AUTO TXT | £75 |
| DESIGN CAD 2D V5 | £195 |
| DESIGN CAD 3D V3.1 | £279 |
| DRAFIX CAD QUICKSTART | £91 |
| DRAFIX CAD ULTRA (V4.01) | £234 |
| DRAFIX CAD WINDOWS | £383 |
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| CHIT-CHAT | £56 |
| CROSSTALK MKIV | £73 |
| CROSSTALK for WINDOWS | £58 |
| DATATALK V4 | £89 |
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| SMARTERM 340 | £131 |
| WINCONNECT | £48 |

## DATABASES

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| CARDBOX PLUS V4.1 | £185 |
| CLIPPER V5.01 | £283 |
| DATAEASE V4.2 | £379 |
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| DATAEASE SQL | P.O.A. |
| DATAPERFECT | £208 |
| DBASE IV + APPLAUSE II + MOUSE | £382 |
| DBASE IV V1.1 LAN 5 USER*** | £592 |
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| DBXL V1.3 | £116 |
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| ZORK I, II, III | £21 |

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| AUTOROUTE EXPRESS US | £80 |
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| OPTIMISATION & COSTING MODULE | £94 |
| POSTCODE BOUNDARY OVERLAY | £229 |
| POSTCODE SECTOR GAZETTEER | £117 |

## MICE

| | |
|---|---|
| SERIAL MOUSE + WINDOWS 3 | £68 |
| **LOGITECH** | |
| PILOT SERIAL | £20 |
| KIDZ MOUSE | £37 |
| MOUSEMAN BUS LEFT HAND | £40 |
| MOUSEMAN BUS RIGHT HAND | £40 |
| MOUSEMAN SERIAL LEFT HAND | £40 |
| MOUSEMAN SERIAL RIGHT HND | £40 |
| MOUSEMAN CORDLESS | £76 |
| TRACKMAN | £53 |
| TRACKMAN PORTABLE | £56 |
| **MICROSOFT** | |
| BUS OR SERIAL | £60 |
| BUS OR SERIAL WINDOWS 3 | £87 |
| BALL POINT PS/2 | £79 |

## NETWORKING

| | |
|---|---|
| **NOVELL** | |
| NOVELL NE1000 CARD | £97 |
| NOVELL NE2000 CARD | £129 |
| NOVELL NE2 16 BIT | £158 |
| NOVELL NE2 32 BIT | £379 |
| NETWARE V2.2 5 USER | £359 |
| NETWARE V2.2 10 USER | £769 |
| NETWARE V2.2 50 USER | £1369 |
| NETWARE V2.2 100 USER | £2269 |
| NETWARE V3.11 10 USER | £1019 |
| NETWARE V3.11 20 USER | £1359 |
| NETWARE V3.11 100 USER | £2649 |
| NETWARE V3.11 250 USER | £5129 |
| **SAGE MAINLAN** | |
| MAINLAN GTi DOS | £297 |
| MAINLAN GTi WINDOWS 3 | £336 |
| MAINLAN GTi EXTRA USER | £121 |
| MAINLAN 386 | £784 |
| MAINLAN DATALINK STARTER | £169 |
| M/LAN DATALINK EXTRA USER | £78 |

## OCR SOFTWARE

| | |
|---|---|
| OMNIPAGE V3 | £397 |
| OMNIPAGE PROFESSIONAL | £628 |
| TYPIST 500 WPM | £408 |
| WORDSCAN | £343 |
| WORDSCAN PLUS | £559 |

## OPERATING SYSTEMS

| | |
|---|---|
| DR DOS V6 | £42 |
| DR DOS MULTI USER | £322 |
| MS DOS 5 UPGRADE | £44 |
| MS DOS 5 + WINDOWS | £105 |
| IBM DOS 5 | £64 |
| IBM DOS 5 UPGRADE | £48 |

## PROJECT MANAGEMENT

| | |
|---|---|
| ABC FLOWCHART | £174 |
| HARVARD PROJECT MAN III | £439 |
| ON-TARGET | £225 |
| PROJECT for WINDOWS | £294 |
| PROJECT SCHEDULAR V5 | £397 |
| SUPER PROJECT V2 | £467 |
| TIME LINE | £394 |

## SPREADSHEETS

| | |
|---|---|
| EXCEL for WINDOWS V3 | £227 |
| EXCEL for WINDOWS V3 LAN | £979 |
| LOTUS 123 EXECUTIVE | £137 |
| LOTUS 123 V2.3 | £240 |
| LOTUS 123 V2.2 LAN SERVER | £374 |
| LOTUS 123 V2.2 LAN NODE | £211 |
| LOTUS 123 V3.1 + | £290 |
| LOTUS 123 V3.1 LAN SERVER | £437 |
| LOTUS 123 V3.1 LAN NODE | £266 |
| LOTUS 123 FOR WINDOWS | £298 |
| MULTIPLAN V4.2 | £92 |
| PC PLANNER III | £112 |
| PLANPERFECT | £211 |
| QUATTRO PRO V3 | £168 |
| SUPERCALC 5.1 | £68 |
| SUPERCALC 5.1 LAN | £186 |
| VP PLANNER PLUS | £81 |
| WINGZ V1.1 | £245 |

## STATS & MATHS

| | |
|---|---|
| MATHCAD | £219 |
| STAT GRAPHICS V4 | £386 |
| MATHEMATICA DOS | £392 |
| MATHEMATICA WINDOWS | £509 |

## UTILITIES

| | |
|---|---|
| 386 MAX | £61 |
| ABOVE DISK | £58 |
| ALLWAYS for LOTUS | £65 |
| ASYMETRIX TOOLBOX | £198 |
| BATTERY WATCH PRO | £25 |
| BROOKLYN BRIDGE | £64 |
| CENTRAL POINT ANTI-VIRUS | £57 |
| CENTRAL POINT BACK-UP V6 | £29 |
| CHECK-IT V3 | £50 |
| DESKLINK V2.2 | £76 |
| DESQVIEW V2.4 | £59 |
| DESQVIEW 386 V2.4 | £107 |
| DR SOLOMANS ANTI-VIRUS | £67 |
| FASTBACK PLUS V3 | £75 |
| FORMFILLER | £58 |
| FORMTOOL GOLD | £48 |
| IMPRESS V2 | £114 |
| LAPLINK PRO V4 | £78 |
| MACE 1990 | £68 |
| MAGELLAN V2 | £76 |
| MASS SUPER LABELLER | £31 |
| MENUGEN | £39 |
| NORTON ANTI-VIRUS V1.5 | £93 |
| NORTON BACK-UP | £61 |
| NORTON COMMANDER 3 | £61 |
| NORTON DESKTOP FOR WINDOWS | £67 |
| NORTON UTILITIES V6 | £85 |
| PC TOOLS V7.1 | £69 |
| PORTEX | £37 |
| QEMM 386 V6 | £48 |
| QRAM 286 V2 | £39 |
| SIDEKICK V2 | £45 |
| SIDEWAYS V3 | £34 |
| SPINWRITE II | £45 |
| SYSTEM SLEUTH 2.0 | £64 |
| TIME SLIP | £68 |
| WINDOWS 3 | £56 |
| WINDOWS 3 LAN | £287 |
| WINDOWS 3 DEVELOPMENT KIT | £238 |
| XTREE GOLD V2.5 | £57 |
| XTREE LAN V2 ENHANCED | £249 |

## WORD PROCESSORS

| | |
|---|---|
| 1ST WORD PLUS | £67 |
| AMI PRO V2 | £285 |
| BRIEF V3 EDITOR | £167 |
| DISPLAYWRITE 5 | £239 |
| GRAMMATIK for DOS | £61 |
| GRAMMATIK for WINDOWS | £61 |
| LETTERPERFECT | £98 |
| LOCOSCRIPT PC V1.5 | £73 |
| MANUSCRIPT V2.1 | £248 |
| MULTIMATE 4 | £238 |
| NEW WORD II | £64 |
| PC WRITE III | £58 |
| PROFESSIONAL WRITE PLUS | £164 |
| PROTEXT V5.5 | £94 |
| SPRINT | £112 |
| TOPCOPY + V2 1991 | £55 |
| TOPCOPY PROFESSIONAL | £108 |
| WORD 5.5 | £227 |
| WORD for WINDOWS V2 | £244 |
| WORD for WINDOWS LAN | £1179 |
| WORD for WORD PROFESSIONAL | £56 |
| WORDCRAFT V6 | £244 |
| WORDPERFECT OFFICE PC | £58 |
| WORDPERFECT V5.1 | £197 |
| WORDPERFECT for WINDOWS | £197 |
| WORDPERFECT V5.1 5 PACK | £889 |
| WORDPERFECT V5.1 20 PACK | £2659 |
| WORDPERFECT OFFICE V3 | £248 |
| WORDSTAR 2000 + REL 3 | £231 |
| WORDSTAR FOR WINDOWS | £203 |
| WORDSTAR PRO V6 | £198 |
| WORDSTAR PRO V6 LAN SERVER | £279 |
| WORDSTAR PRO V6 LAN NODE | £59 |
| WORDSTAR LEGACY | £129 |

***Requires Stand Alone Copy

**SALES HOTLINE 081-760 0014**
**FAX: 081-760 9861**

DELIVERY CHARGES FOR UK MAINLAND SOFTWARE: £7 + VAT PER BOX EXTRA £2 + VAT ADDITIONAL BOX

**FOR FULL DETAILS & COUPON SEE OVER**

# Computers by Post

LOWEST U.K. PRICES GUARANTEED

MAIL ORDER LEADERS SINCE 1982

## PRINTERS

**SPECIAL OFFER All printers include a FREE IBM parallel cable.**

| | | | | | |
|---|---|---|---|---|---|
| **BROTHER** | | DFX-8000 | £1945 | PAINTWRITER XL (MAC) | £1269 |
| M1309 | * £146 | LQ-200 | £165 | RUGGED WRITER | * £928 |
| M1324 | * £192 | LQ-450 | £167 | **IBM** | |
| HJ100 | * £189 | LQ-570 | £208 | PROPRINTER 24P | £208 |
| M1818 | * £249 | LQ-870 | £365 | SERIES II 2380 | £269 |
| M1918 | * £356 | LQ-860 Colour | £447 | SERIES II 2381 | £335 |
| M1824 | * £279 | LQ-1010 | £274 | SERIES II 2390 | £309 |
| M1924 | * £439 | LQ-1070 | £317 | SERIES II 2391 | £369 |
| HJ770 | *£453 | LQ-1170 | £440 | EXECJET | £439 |
| HJ700 | P.O.A. | LQ-1060 Colour | £598 | QUIETWRITER III | £464 |
| M2518 | * £539 | LQ-2550 Colour | £678 | QUICKWRITER | £489 |
| **CANON** | | SQ-850 | £435 | **MANNESMAN TALLY** | |
| BJ 10EX Portable | £185 | SQ-2550 | £629 | MT81 | £89 |
| BJ 300 | * £339 | **HEWLETT PACKARD** | | MT82 | £209 |
| BJ 330 | * £384 | THINKJET | * £269 | **NEC** | |
| BJC 800 | £1229 | QUIETJET | * £302 | P20 | £183 |
| **DICONIX** | | QUIETJET + | * £388 | P30 | £246 |
| 150 + Portable | £212 | DESKJET 500 | £273 | P60 | £334 |
| **EPSON** | | DESKJET 500C | £475 | P70 | £402 |
| LX-400 | £103 | DESKWRITER (MAC) | £316 | P90 | £629 |
| LX-850 + | £143 | DESKWRITER C (MAC) | £489 | **OKI** | |
| LX-1050 | £209 | PAINTJET | * £434 | ML 320 | £295 |
| FX-850 | £267 | PAINTJET XL | * £1048 | ML 380 | £169 |
| FX-1050 | £339 | PAINTWRITER (MAC) | * £466 | **OLIVETTI** | |
| DFX-5000 | £1086 | | | DM124C Colour | * £207 |
| | | | | JP150 | * £217 |
| | | | | JP350 | * £292 |
| | | | | **PANASONIC** | |
| | | | | KXP 1170 | £104 |
| | | | | KXP 1123 | £132 |
| | | | | KXP 1124i | £176 |
| | | | | KXP 1695 | £276 |
| | | | | KXP 1624 | £276 |
| | | | | KXP 1654 | * £349 |
| | | | | KXP 2624 | * £347 |
| | | | | **SEIKOSHA** | |
| | | | | LT-20 Portable | £248 |
| | | | | SP1900 + | £88 |
| | | | | **STAR** | |
| | | | | STARJET SJ48 | £177 |
| | | | | LC20 | £102 |
| | | | | LC200 Colour | £146 |
| | | | | LC15 | £177 |
| | | | | LC24-10 | £136 |
| | | | | LC24-200 | £167 |
| | | | | LC24-200 Colour | £206 |
| | | | | LC24-15 | £246 |
| | | | | ZA200 Colour | * £238 |
| | | | | ZA250 Colour | * £301 |
| | | | | XB24-200 Colour | * £298 |
| | | | | XB24-250 Colour | * £358 |

ALL PRINTERS MARKED WITH AN * INCLUDE 1 YEAR ON-SITE MAINTENANCE

## LASER PRINTERS

| | Pages Per Minute | | |
|---|---|---|---|
| BROTHER HL-4 | 4 | * | £597 |
| BROTHER HL-4V | 4 | * | £709 |
| BROTHER HL-4PS POSTSCRIPT | 4 | * | £1082 |
| BROTHER HL-8V | 8 | * | £1047 |
| BROTHER HL-8D DUAL BIN DUPLEX | 8 | * | £1479 |
| BROTHER HL-8PS POSTSCRIPT | 8 | * | £1385 |
| CANON LBP-4 PLUS | 4 | * | £583 |
| CANON LBP-8 III PLUS | 8 | * | £972 |
| CANON LBP-IIIT DUAL BIN | 8 | * | £1344 |
| CANON LBP-IIIR DUAL BIN DUPLEX | 8 | * | £1443 |
| EPSON EPL-4100 | 6 | * | £566 |
| EPSON EPL-7500 POSTSCRIPT | 6 | * | £1162 |
| HP LASERJET IIIP | 4 | * | £699 |
| HP LASERJET III | 8 | * | £1024 |
| HP LASERJET IIID DUAL BIN DUPLEX | 8 | * | £1579 |
| HP LASERJET IIISi | 16 | * | £2525 |
| IBM 4019E XL | 5 | | £725 |
| IBM 4019XL | 10 | | £947 |
| IBM 4029-020 | 6 | | £889 |
| IBM 4029-030 | 10 | | £1079 |
| IBM 4029-040 Dual Bin | 10 | | £1229 |
| KYOCERA F800T | 8 | * | £919 |
| KYOCERA F820T DUAL BIN | 8 | * | £1329 |
| KYOCERA P2002 POSTSCRIPT | 10 | | £2585 |
| KYOCERA F5000 A3 | 9 | | £3849 |
| MANNESMAN TALLY MT904 | 4 | * | £539 |
| MANNESMAN TALLY MT904 PS POSTSCRIPT | 4 | * | £1089 |
| MANNESMAN TALLY MT911 | 10 | * | £989 |
| NEC SILENTWRITER2 S60P POSTSCRIPT | 6 | * | £1085 |
| NEC SILENTWRITER2 266 | 8 | * | £675 |
| NEC SILENTWRITER2 290 POSTSCRIPT | 8 | * | £1392 |
| NEC LC890XL POSTSCRIPT | 8 | * | £2329 |
| OKI LASER 400 0.5Mb | 4 | * | £485 |
| OKI LASER 800 0.5Mb | 8 | * | £865 |
| OKI LASER 800 DUAL BIN 0.5Mb | 8 | * | £1045 |
| OKI LASER 830 POSTSCRIPT 2Mb | 8 | * | £929 |
| OKI LASER 840 POSTSCRIPT 2Mb | 8 | * | £1199 |
| PANASONIC KXP4420 | 8 | * | £624 |
| PANASONIC KXP4450I | 11 | * | £928 |
| PANASONIC KXP4455 POSTSCRIPT | 11 | * | £1454 |
| QMS PS410 POSTSCRIPT | 4 | | £1329 |
| QMS PS815 POSTSCRIPT | 8 | | £2199 |
| QMS PS2210 POSTSCRIPT | 22 | | £7099 |
| SHARP JX9500H | 9 | * | £639 |
| SHARP JX9700 | 16 | * | £1369 |
| STAR LP-4 | 4 | * | £572 |
| STAR LP4PS STARSCRIPT POSTSCRIPT | 4 | * | £785 |
| STAR LP8-III | 8 | * | £914 |
| STAR LP8-III STARSCRIPT POSTSCRIPT | 8 | * | £1148 |
| TEXAS INST. MICROLASER PLUS | 9 | * | £719 |
| TEXAS INST. MICROLASER + PS17 POSTSCRIPT | 9 | * | £1099 |
| TEXAS INST. MICROLASER + PS35 POSTSCRIPT | 9 | * | £1239 |

ALL LASERS MARKED WITH AN * INCLUDE 1 YEAR ON-SITE MAINTENANCE

## CO-PROCESSORS

| | | | |
|---|---|---|---|
| **INTEL** | | **IIT** 2C87-8 8MHz | £43 |
| 8087 5MHz | £51 | 2C87-10 10MHz | £46 |
| 8087 8MHz | £72 | 2C87-12 12MHz | £47 |
| 8087 10MHz | £94 | 2C87-20 20MHz | £52 |
| 80287 XL 6/8/10/12MHz | £49 | 3C87sx-16 16MHz | £74 |
| 80287 XLT for SLT's | £54 | 3C87sx-20 20MHz | £81 |
| 80387-SX 16MHz | £76 | 3C87sx-25 25MHz | £97 |
| 80387-SX 20MHz | £82 | 3C87-16 16MHz to 25MHz | £115 |
| 80387-DX 16MHz to 33MHz | £122 | 3C87-33 33MHz | £120 |
| 80487-SX | £307 | 3C87-40 40MHz | £165 |

## PLOTTERS

| | | | | | |
|---|---|---|---|---|---|
| **HEWLETT PACKARD** | | | G1022 | A3 | £659 |
| 7440AU | * A4 | £543 | G1052 | A3 | £989 |
| 7475AU | * A3 | £725 | G1012C | * A3 | £1479 |
| 7550B PLUS | * A3 | £2173 | G1824C | * A1 | £3379 |
| 7570AU | * A1 | £1999 | G1834C | * A1 | £4109 |
| 7575AU DXL | * A1 | £2559 | G1825C | * A0 | £4769 |
| 7576AU EXL | * A0 | £3559 | | | |
| 7595C SX PLUS | * A0 | £4789 | **ROLAND** | | |
| 7596C RX PLUS | * A0 | £5799 | SKETCHMATE | A4 | £319 |
| 7599B MX PLUS | * A0 | £6499 | DXY 1100 | A3 | £493 |
| DESIGNJET | * A0 | £7499 | DXY 1200 | A3 | £624 |
| **CALCOMP** | | | DXY 1300 | A3 | £828 |
| Model 83 | A3 | £939 | DPX 2500 | * A2 | £2347 |
| 1023 | * A1 | £3249 | DPX 3500 | * A1 | £2959 |
| 1025 | * A0 | £3599 | DPX 4600 | * A0 | £5139 |
| 1026 | * A0 | £5559 | GRX 300AG | * A1 | £2559 |
| **OCE** | | | GRX 400AG | * A0 | £3424 |
| G1012 | A3 | £495 | *Includes 1 Year on-site maintenance | | |

## SCANNERS

| | | | |
|---|---|---|---|
| **CANON** | | Document Feeder | £281 |
| **inc 1 Year on-site** | | Scanjet IIC AT | £1081 |
| Flatbed Scanner IX30F | £574 | Scanjet IIC PS/2 | £1081 |
| Interface SI-30 | £88 | Scanjet IIC MAC | £999 |
| Auto document feeder | £301 | **LOGITECH** | |
| OCR Software | £277 | SCANMAN 32 | £78 |
| ScanDo scanning software | £37 | SCANMAN 256 MCA | £199 |
| **GENIUS** GS-4500 | £76 | SCANMAN 256 | £150 |
| GB-105G | £123 | SCANMAN 32 MAC | £248 |
| GSC-105 Colourscan | £236 | **PANASONIC** | |
| **HEWLETT PACKARD** | | FXRS-506 + Wordscan | £584 |
| **inc 1 Year on-site maint.** | | FXRS-307 + Wordscan | £793 |
| Scanjet Plus | £483 | XT/AT Interface | £122 |
| PC Interface | £267 | PS/2 Interface (506) | £191 |
| PS/2 Interface | £270 | Auto Document Feeder | £339 |
| MAC Interface | £270 | SCSI Interface (307) | £188 |

## MODEMS

**INTERNAL**

| | | | |
|---|---|---|---|
| **AHKTER** | | POCKET COMFAX | £272 |
| DM2400 V22 BIS MNP5 | £108 | DESKTOP QUAD | £355 |
| **AMSTRAD** | | POCKET QUAD SYNC | £348 |
| MC2400 + SOFT | £78 | RAPIER | £444 |
| **DATAFLEX** | | RAPIER ENHANCED | P.O.A. |
| STRADCOM + SOFT | £107 | **DOWTY** | |
| BISCOM + SOFT | £141 | QUATTRO 2422D | £398 |
| QUADCOM + SOFT | £198 | MAYZE 24 QUAD | £385 |
| COMFAX + SOFT | £214 | MAYZE 96 QUAD | £819 |
| QUADSYNC | £269 | SYNCRO 96 | £625 |
| PC PROFESSIONAL + SOFT | £309 | TRAILBLAZER 18K | £639 |
| RAPIER | £379 | TRAILBLAZER V32 | £979 |
| RAPIER ENHANCED | £444 | **HAYES** | |
| **DOWTY** | | SMART 1200 | £223 |
| QUATTROCARD | £454 | SMART 2400 | £249 |
| QUATTRO CARD PLUS | £545 | SMART 2400 QUAD | £299 |
| **HAYES** | | SMART 2400 + QUAD | £349 |
| SMARTMODEM 1200B | £218 | SMART 9600 + QUAD | £459 |
| **MIRACOM** | | ULTRA SMART 9600 | £559 |
| WS4000 + SOFT | £97 | **MIRACOM** | |
| K/CARD 3000 + SOFT V22 | £187 | WS4000 | £97 |
| K/CARD 3000 + SOFT V22 BIS | £249 | WS3000 V22 BIS | £229 |
| COURIER 2400e QUAD + SOFT | £247 | COURIER 2400e QUAD | £257 |
| **PACE** | | COURIER 2400 PLUS | £325 |
| LINNET PLUS + SOFT | £96 | COURIER HST 14.4 | £389 |
| LINNET 1200 + SOFT | £148 | COURIER HST V32 | £389 |
| LINNET 2400 + SOFT | £187 | COURIER 14.4 PLUS | £595 |
| LINNET QUAD + SOFT | £223 | COURIER HST DUAL STND | £589 |
| LINNET 32 + SOFT | £363 | **PACE** | |
| ULTRALINK QUAD + SOFT | £247 | LINNET PLUS | £96 |
| **WORLD PORT FAX/MODEM** | | LINNET 1200 | £148 |
| 2496i | £359 | LINNET 2400 | £187 |

**EXTERNAL**

| | | | |
|---|---|---|---|
| **AMSTRAD** | | LINNET QUAD | £225 |
| SM2400 + SOFT | £119 | LINNET 32 | £363 |
| **DATAFLEX** | | ULTRALINK QUAD | £247 |
| POCKET STRADCOM | £125 | ULTRALINK 32 PLUS | £557 |
| POCKET BISCOM | £176 | **WORLD PORT FAX/MODEM** | |
| POCKET QUADCOM | £258 | 2423 V22 BIS | £215 |
| | | 2400 MNP | £295 |
| | | 2496 | £355 |
| | | 9600 V32 | £575 |

## MONITORS

| | | | |
|---|---|---|---|
| **CBP** | | CM3209 14" VGA/SVGA* | £264 |
| 14" FST AMBER | £62 | CM3279 14" VGA/SVGA LR | * £304 |
| 14" VGA FST MONO | £79 | CM2789 20" AUTOSCAN | £1099 |
| 14" VGA COLOUR | £175 | **SONY** | |
| 14" SUPER VGA COLOUR | £189 | ***NEW MODELS – CALL FOR DETAILS*** | |
| 14" MULTISYNC | £244 | **TAXAN** | |
| **JVC** | | KX143 14" FST GREEN | £96 |
| 3014 LR 14" VGA | * £285 | KX144 14" FST AMBER | £96 |
| 4214 LR 14" MULTISCAN | * £372 | KX245 12" VGA WHITE | £89 |
| 6116 LR 16" QUADSCAN | * £785 | KX445 14" VGA FST WH | £109 |
| 6120 LR 20" QUADSCAN | * £1199 | KX445LR 14" VGA FST WHITE | £149 |
| **NEC** | | VIKING II/PC + CARD | £1189 |
| 3FG 15" MULTISYNC | £367 | VIKING II/PS2 + CARD | £1189 |
| 4FG 15" MULTISYNC | £464 | 785 14" VGA | £249 |
| 5FG 17" MULTISYNC | £889 | 780 14" VGA | £310 |
| 5D 20" MULTISYNC | £1219 | 780LR 14" VGA | £327 |
| 6FG 21" MULTISYNC | £1589 | 790 14" VGA | £325 |
| **PANASONIC** | | 770 + LR 14" MULTISYNC | £364 |
| C1381 14" MULTISCAN | * £218 | 775 14" MULTISYNC | £364 |
| TX1703 17" MULTISCAN | * £788 | 795 14" MULTISYNC | £404 |
| TX2013 20" MULTISCAN | * £1155 | 875 17" MULTISYNC | £688 |
| TX2103 21" MULTISCAN | * £1425 | 970 20" MULTISYNC | £1185 |
| **PHILIPS** | | ULTRAVISION 1000S 20" | £1178 |
| BM7749 14" VGA WHITE | * £78 | ULTRAVISION 1150 21" | £1685 |
| BM7490 14" VGA LR WH* | £114 | ULTRAVISION 1095 20" | £1744 |
| CM8833/II 14" CGA | * £179 | LR = Low Radiation | |
| CM9809 14" VGA | * £228 | * = 1 Year On-Site Maintenance | |

## LASER PERIPHERALS

| | | | |
|---|---|---|---|
| **BROTHER HL8e** | | **HP LASERJET II** | |
| JETWARE 1Mb Starter | £117 | 1Mb Memory | £63 |
| JETWARE 1Mb Expansion | £117 | 2Mb Memory | £98 |
| **CANON** | | JETPAGE Postscript | £227 |
| LBP-4 1Mb Memory | £127 | **HP LASERJET IIP/IIIP/III/IIID** | |
| LBP-4 Lower Cass/Tray | £99 | 1Mb Memory | £55 |
| **EPSON** | | 2Mb Memory | £87 |
| EPL/GQ Fonts from | £95 | 3Mb Memory | £124 |
| GQ5000 512K Modules | £48 | 4Mb Memory | £145 |
| EPL 512K Memory | £48 | JETPAGE Postscript | £227 |
| EPL 2Mb Memory | £172 | HP ADOBE Postscript | £338 |
| | | JETFONT Superset | £128 |
| | | JETFONT 425 In 1 | £217 |
| | | APPLETALK Interface | £135 |
| | | Lower Cassette Tray | £89 |

ALL JETWARE PRODUCTS CARRY A 5 YEAR GUARANTEE

**HCF –1000** 1000 sheet input tray for Canon SX Engine Machines. Brother HL8 series Canon LBP8 II. HP II/III. Star LP8/LP8II series. QMS PS 810/810 Turbo. £129

## TERMINALS

| | | | |
|---|---|---|---|
| **WYSE** | | 370 14" Colour | £689 |
| 30 + ASCII 14" Green | £229 | 185 ANSI 14" Amber | £274 |
| 30 + ASCII 14" Amber | £229 | 185 ANSI 14" Green | £274 |
| 50 ASCII 14" Green | £279 | 185 ANSI 14" White | £274 |
| 50 ASCII 14" Amber | £279 | 160 14" Amber | £337 |
| 60 14" Amber | £285 | 160 14" Green | £337 |
| 60 14" Green | £285 | 160 14" White | £337 |
| 60 14" White | £285 | Please state on models 60/120/ | |
| 120 14" Amber | £275 | 160/370 which keyboard is | |
| 120 14" Green | £275 | required out of ASCII/AT Enhanced/ | |
| 120 14" White | £275 | ANSI. | |

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# COMPUTERS

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## AMSTRAD

| | |
|---|---|
| PCW 9256 Dot Matrix Printer | £287 |
| PCW 9512+ and Daisywheel Printer | £371 |
| PCW 9512+ and Canon BJ10e Printer | £451 |

LOW COST ON-SITE MAINTENANCE CALL FOR DETAILS

| | 10" Mono | 14" Mono | 14" Colour | 10" Hi-Res | 14" Colour |
|---|---|---|---|---|---|
| 5086 SD 3.5" | £244 | £244 | £326 | £408 | £408 |
| 5086 DD 3.5" | £269 | £269 | £349 | £432 | £432 |
| 5086 HD40Mb 3.5" | £326 | £326 | £408 | £489 | £489 |
| *All 5086's include Microsoft Works V2* | | | | | |
| 5286 SD 3.5" | £369 | £369 | £448 | £529 | £529 |
| 5286 HD40Mb 3.5" | £448 | £448 | £529 | £612 | £612 |
| *All 5286's include Lotus 123 V2.2* | | | | | |
| PC4386sx HD80Mb + Windows 3 | £816 | £816 | £898 | £979 | £979 |

| | Mono | Colour | 14" Hi-Res Colour VGA |
|---|---|---|---|
| PC3286 HD40Mb 3.5" | £448 | £531 | £612 |
| PC3286 HD40Mb 3.5" + 5.25" Drives | £489 | £572 | £653 |
| *All 3286's include Lotus 123 V2.2* | | | |
| PC3386sx HD40Mb 3.5" | £612 | £694 | £776 |
| PC3386sx HD80Mb 3.5" | £816 | £898 | £979 |

*All 3386sx's include Microsoft Windows 3 & Mouse*

## IBM

| Model | CPU | MHz | Hard Disk | Floppy | RAM | VGA Mono | VGA Col. |
|---|---|---|---|---|---|---|---|
| PS/1 | 286 | 10 | 30Mb | 3.5" | 1Mb | £499 | £729 |
| PS/1 | 286 | 10 | 40Mb | 3.5" | 1Mb | £659 | £789 |
| *286 Computers complete with Microsoft Works V2, Mouse & DOS* | | | | | | | |
| FAMIPACK | 286 | 10 | 40Mb | 3.5" | 1Mb | — | £765 |
| *Famipack system includes Audio Card and Joystock, Sierra sliphead, Cakewalk Apprentice, PC Globe, Famitap, World Class Chess, Collins On-Line, Bushbuck.* | | | | | | | |
| PS/1 | 386sx | 16 | 40Mb | 3.5" | 2Mb | — | £869 |
| PS/1 | 386sx | 16 | 40Mb | 3.5" | 2Mb | 2 Exp slots | £949 |
| PS/1 | 386sx | 16 | 80Mb | 3.5" | 2Mb | 2 Exp slots | £1129 |
| *386sx Computers complete with Microsoft Works V2, Windows 3, Mouse & Dos* | | | | | | | |

| Model | CPU | MHz | Hard Disk | Floppy | RAM | 8503 VGA Mono | 8513 VGA Col. | 8515 VGA Col. |
|---|---|---|---|---|---|---|---|---|
| 30-H41 | 286 | 10 | 45Mb | 3.5" | 1Mb | £919 | £969 | £1159 |
| 35-040 | 386sx | 20 | — | 3.5" | 2Mb | £899 | £989 | £1089 |
| 35-043 | 386sx | 20 | 40Mb | 3.5" | 2Mb | £1059 | £1129 | £1229 |
| 40-043 | 386sx | 20 | 40Mb | 3.5" | 2Mb | £1229 | £1329 | £1419 |
| 40-045 | 386sx | 20 | 80Mb | 3.5" | 2Mb | £1399 | £1499 | £1599 |
| 55-041 | 386sx | 16 | 40Mb | 3.5" | 4Mb | — | £1389 | £1409 |
| 55-081 | 386sx | 16 | 80Mb | 3.5" | 4Mb | — | £1569 | £1639 |
| 55-161 | 386sx | 16 | 160Mb | 3.5" | 4Mb | — | £1889 | £1979 |
| 57-045 | 386sx | 20 | 80Mb | 3.5" | 4Mb | — | £1889 | £2039 |
| 57-A49 | 386sx | 20 | 160Mb | 3.5" | 8Mb | — | £2589 | £2749 |

*All above systems complete with Keyboard, Monitor & Dos*

## OLIVETTI

| Model | CPU | MHz | Hard Disk | Floppy | RAM | VGA Mono | VGA Col. |
|---|---|---|---|---|---|---|---|
| PCS286 | 286 | 16 | 40Mb | 3.5" | 1Mb | £694 | £774 |
| PCS286 | 286 | 16 | 80Mb | 3.5" | 1Mb | £855 | £929 |
| PCS286 | 286 | 16 | 120Mb | 3.5" | 1Mb | £1015 | £1093 |
| PCS386sx | 386 | 16 | 40Mb | 3.5" | 1Mb | £907 | £984 |
| PCS386sx | 386 | 16 | 100Mb | 3.5" | 1Mb | £1134 | £1211 |

*Special offer:– Microsoft Works V2 for only £45 with any Olivetti*

## TANDON

| Model | CPU | MHz | Hard Disk | Floppy | RAM | VGA Mono | VGA Colour | Super VGA Colour |
|---|---|---|---|---|---|---|---|---|
| **N/Range** | | | | | | | | |
| 286 | 286 | 12 | 40Mb | 3.5" | 1Mb | £771 | £899 | £929 |
| 386 | 386sx | 16 | 40Mb | 3.5" | 1Mb | £816 | £947 | £967 |
| 386 | 386sx | 16 | 110Mb | 3.5" | 1Mb | £849 | £969 | £989 |
| **N/Workstation Range** | | | | | | | | |
| 286 | 286 | 12 | Ethernet | 3.5" | 1Mb | £699 | £849 | — |
| 386 | 386sx | 16 | Ethernet | 3.5" | 1Mb | £749 | £889 | — |
| *N/Workstation computers complete with an Ethernet network card* | | | | | | | | |
| **MCS Range** | | | | | | | | |
| 286/16 | 286 | 16 | — | 3.5" | 2Mb | £769 | £899 | £899 |
| 386sx/20 | 386sx | 20 | — | 3.5" | 2Mb | £899 | £1020 | £1020 |
| 386sx/20C | 386sx | 20 | — | 3.5" | 2Mb | £989 | £1119 | £1119 |
| 486/20 | 486sx | 20 | — | 3.5" | 2Mb | £1084 | £1216 | £1216 |
| 486/33 | 486 | 33 | — | 3.5" | 2Mb | £1435 | £1567 | £1567 |
| **MCS Pro Range** | | | | | | | | |
| 386/33C | 386 | 33 | — | 3.5" | 4Mb | £1348 | £1479 | £1479 |
| 486/33 | 486 | 33 | — | 3.5" | 4Mb | £1699 | £1829 | £1829 |

Hard Disks for MCS Range:– 40Mb £130, 110Mb £260, 200Mb £434, 400Mb £868
Extra Floppy Disks:– 3.5" £66, 5.25" £69
*MCS computers complete with Windows 3, Mouse & DOS*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PacII Range** | | | | | | | | |
| 386/20C | 386sx | 20 | — | — | 2Mb | £1079 | £1209 | £1209 |
| 486/20 | 486sx | 20 | — | — | 2Mb | £1199 | £1336 | £1336 |
| 486/33 | 486 | 33 | — | — | 2Mb | £1559 | £1693 | £1693 |

DataPacII for PacII Range:– 40Mb £219, 100Mb £328, 200Mb £526, 400Mb £878
Floppy Disk:– 3.5" £75
*PacII computers complete with Windows 3, Mouse & DOS*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **386/33 Range** | | | | | | | | |
| 386/33 | 386 | 33 | 110Mb | 5.25" | 1Mb | £1699 | £1799 | £1859 |
| 386/33 | 386 | 33 | 200Mb | 5.25" | 1Mb | £2019 | £2159 | £2209 |
| 386/33 | 386 | 33 | 300Mb | 5.25" | 1Mb | £2299 | £2499 | £2519 |
| **386/33 Tower Range** | | | | | | | | |
| 386/33T | 386 | 33 | 100Mb | Dual | 4Mb | £1999 | £2137 | £2199 |
| 386/33T | 386 | 33 | 200Mb | Dual | 4Mb | £2225 | £2313 | £2359 |
| 386/33T | 386 | 33 | 300Mb | Dual | 4Mb | £2620 | £2752 | £2795 |
| 386/33T | 386 | 33 | 600Mb | Dual | 4Mb | £3099 | £3190 | £3234 |
| **486/33 Range** | | | | | | | | |
| 486/33 | 486 | 33 | 110Mb | 3.5" | 4Mb | £3069 | £3209 | £3269 |
| 486/33 | 486 | 33 | 200Mb | 3.5" | 4Mb | £3425 | £3559 | £3619 |
| 486/33 | 486 | 33 | 300Mb | 3.5" | 4Mb | £3649 | £3829 | £3849 |
| **486/33 Tower Range** | | | | | | | | |
| 486/33T | 486 | 33 | 100Mb | Dual | 8Mb | £3322 | £3454 | £3498 |
| 486/33T | 486 | 33 | 200Mb | Dual | 8Mb | £3498 | £3629 | £3673 |
| 486/33T | 486 | 33 | 300Mb | Dual | 8Mb | £3936 | £3962 | £4111 |
| 486/33T | 486 | 33 | 600Mb | Dual | 8Mb | £4375 | £4507 | £2849 |
| 486/33T | 486 | 33 | 1000Mb | Dual | 8Mb | £4814 | £4946 | £4989 |

*386/33 & 486/33 computers complete with Windows 3, Mouse and DOS*

# DIGITISERS

| | | | |
|---|---|---|---|
| **CALCOMP** | | **SUMMAGRAPHICS** | |
| 23120 Dr.Board 12"x12" | £289 | BIT PAD PLUS 12"x12" | * £249 |
| 33180D Dr.Board 12"x18" | £599 | SUMMASKETCH 961 6"x9" | * £249 |
| 23240 Dr.Board 18"x24" | £1399 | SUMMASKETCH II 12"x12" | * £289 |
| **HEWLETT PACKARD** | | SUMMASKETCH II PRO 12"x18" | * £489 |
| 7060A Sketch Pro 12"x12" | * £299 | * = 1 Year On-Site Maintenance | |

# HARD DISKS

| | | | |
|---|---|---|---|
| 40Mb Hard card | £144 | 330Mb 18ms ST4376N | £849 |
| | | 338Mb 16ms ST2383A | £829 |
| **SEAGATE** | | 1050Mb 15ms ST41200N | £1669 |
| 21Mb 65ms ST225 M | £129 | XT Controller RLL | £30 |
| 21Mb 28ms ST125-1 M | £155 | XT Controller MFM | £30 |
| 32Mb 65ms ST238R R | £139 | AT Controller RLL | £35 |
| 32Mb 28ms ST138 M | £158 | AT Controller MFM | £35 |
| 42Mb 70ms ST250R R | £149 | Hard drive cables | £8 |
| 42Mb 28ms ST251 M | £178 | **TAPE STREAMERS** | |
| 65Mb 28ms ST277R R | £179 | JUMBO Int. 40/112Mb | £166 |
| 80Mb 28ms ST4096/7 M | £359 | JUMBO Ext. 40/112Mb | £254 |
| 89Mb 19ms ST1102A I | £229 | JUMBO Int. 80/250Mb | £219 |
| 128Mb 15ms ST1150R R | £419 | JUMBO Ext. 80/250Mb | £309 |
| 204Mb 15ms ST1239N S | £529 | JUMBO Int. 700Mb | £809 |
| 210Mb 15ms ST1239A I | £489 | JUMBO Ext. 700Mb | £969 |

M = MFM, R = RLL, I = IDE, S = SCSI

# FACSIMILE

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| JT PLUS FAX CARD | £217 | SAMSUNG SF1000* | £242 |
| AMSTRAD FX6000AT* | £364 | SAMSUNG SF1100* | £321 |
| AMSTRAD FX5050* | £288 | SAMSUNG SF2300* | £435 |
| CANON 170 | £529 | TOSHIBA TF-132* | £422 |
| HITACHI CFX1* | £689 | TOSHIBA TF-172* | £489 |
| PANASONIC UF121 | £348 | TOSHIBA TF-232* | £529 |
| PANASONIC F3550* | £474 | TOSHIBA TF-251* | £725 |
| PANASONIC UF270M | £759 | TOSHIBA TF-381* | £1765 |

* 1 Year on-site maintenance

# PORTABLES

| | | |
|---|---|---|
| **AMSTRAD** | | |
| ALT 286-40+BJ10e | | £824 |
| ALT 386sx-80 2Mb | | £1077 |
| ANB 386sx-20 | | £895 |
| ANB 386sx-40 | | £1129 |
| ACL 386sx Colour | | £2965 |
| **ATARI** Portfolio | | £138 |
| **COMMODORE** | | |
| CLT286 | * | £895 |
| **HEWLETT PACKARD** | | |
| PALMTOP HP95LX | | £389 |
| CONNECTIVITY PACK | | £69 |
| **PANASONIC** | | |
| CF150B | * | £439 |
| CF170-20 | * | £695 |
| CF270-20 | * | £995 |
| CF270-60 | * | £1229 |
| CF370-60 | * | £1759 |
| **SANYO** | | |
| NB17 286 60 with FREE Diconix 150 Printer | | £1195 |
| NB18 386SX 20 3 Year | | £1289 |
| NB18 386SX 60 Warranty | | £1389 |
| NB18 386SX 80 | | £1539 |
| **SHARP** | | |
| 6521 | * | £999 |
| 6541 | * | £1099 |
| 6621 | * | £1779 |
| 6641 | * | £1829 |
| 6661 | * | £2119 |
| 8041 VGA Colour | * | £2999 |
| 8501 VGA Colour | * | £3989 |
| **TANDON** | | |
| NB/386sx-40 | | £1309 |
| NB/386sx-60 | | £1458 |
| **TEXAS INSTRUMENTS** | | |
| TM2000-20 | | £695 |
| TM3000sx-20 | | £1399 |
| TM3000sx-40 | | £1579 |
| TM3000sx-60 | | £1739 |
| TM3000sx-80 | | £1979 |
| TM3000 Win sx-60 | | £2099 |
| TM3000 Win sx-80 | | £2399 |
| **TOSHIBA** | | |
| T1000XE+FDD | | £699 |
| T1000LE-20 | | £736 |
| T2000-20 | | £995 |
| T2000-40 | | £1104 |
| T2000SX 20 | | £1271 |
| T2000SX 40 | | £1382 |
| T2000SXE-60 | | £1787 |
| T2200SX-60 | | £2155 |
| T4400sx-80 | | £2798 |
| T3100SX 40 | | £1326 |
| T3100SX 80 | | £1419 |
| T3200SX 40 | | £1325 |
| T3200SX 120 | | £1529 |
| T3200SXC 120 Col. | | £4019 |
| T5200 100 | | £1953 |
| T5200 200 | | £2155 |
| **ZENITH** | | |
| SlimsPORT 286 | | £799 |
| MastersPORT 286 | * | £1149 |
| MastersPORT 386SX | * | £1889 |
| MastersPORT 386SL | * | £2289 |
| SupersPORT 486SX | * | P.O.A. |
| SupersPORT 486 | * | P.O.A. |

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### IBM
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**NEW PS/1**

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|---|---|
| Model 201 | £349 |
| Model 241 | £799 |
| Model 241F | £799 |
| Model 342 | £899 |
| Model 242 | £999 |
| Model 282 | £1199 |

### AST

**BRAVO**

| | |
|---|---|
| 286/16,40Mb | £799 |
| 386SX20,40Mb | £899 |
| 386SX20,BUNDLE | £1199 |
| 486/25,80Mb | £1749 |
| 486/25,200Mb | £1999 |
| 486/25,BUNDLE | £1999 |

**PREMIUM**

| | |
|---|---|
| 386SX16,40Mb | £699 |
| 386/33TE,300Mb | £3999 |
| 486/33E,100Mb | £3399 |
| 486/33TE,300Mb | £5199 |

**PREMIUM II**

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|---|---|
| 386SX20,40Mb | £949 |
| 386/33,80Mb | £1649 |
| 486SX20,80Mb | £1749 |
| 486SX20,200Mb | £1999 |
| 486/33,80Mb | £2499 |

| | $503 | $513 | $518 | $515 |
|---|---|---|---|---|
| 30-H01 | £749 | £899 | £979 | £1049 |
| 30-H02 | £789 | £939 | £1019 | £1089 |
| 30-H41 | £989 | £1139 | £1219 | £1289 |
| 35-040 | £1049 | £1199 | £1269 | £1349 |
| 35-043 | £1249 | £1399 | £1469 | £1549 |
| 35-24X | £1229 | £1379 | £1449 | £1529 |
| 40-043 | £1499 | £1649 | £1729 | £1799 |
| 40-045 | £1699 | £1749 | £1929 | £1999 |
| 55-041 | £1249 | £1399 | £1499 | £1599 |
| 55-081 | £1449 | £1599 | £1699 | £1799 |
| 55-161 | £1749 | £1899 | £1999 | £2099 |
| 57-045 | £1849 | £1899 | £2079 | £2149 |
| 57-A49 | £2549 | £2599 | £2779 | £2849 |

### APRICOT (VGA Mono)

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|---|---|
| LANstation 16-50 | £1245 |
| LANstation 20-50 | £1399 |
| LANstation 20-100 | £1599 |
| Qi 350ti | £2299 |
| Qi 660ti | £3599 |
| Qi PC386SX | £1599 |
| Qi PCi 386 25MHz,118 | £2799 |
| Qi 410 347Mb | £6699 |
| Qi 430 | £7999 |
| Qi 810 | £7999 |
| Qi 900 486/25MHz | £3699 |
| XEN-S 286,47Mb | £1199 |
| XEN-S 386SX,30Mb | £1299 |
| XEN-S 386SX,47Mb | £1399 |
| Xen-S 386SX,100Mb | £1549 |
| VGA Colour | extra £200 |

### AMSTRAD

| | Mono | Colour | HRCD |
|---|---|---|---|
| 1640SD | £349 | £509 | |
| 1640DD | £389 | £555 | |
| 1640HD30 | £479 | £649 | |
| 3086SD | £299 | £379 | £459 |
| 3086DD | £349 | £429 | £509 |
| 3086HD30 | £499 | £579 | £659 |
| 5086SD | £349 | £429 | £509 |
| 5086DD | £399 | £479 | £559 |
| 5086HD40 | £569 | £649 | £729 |
| 3286SD | £479 | £559 | £639 |
| 3286HD40 | £639 | £719 | £799 |
| 3286HD80 | £739 | £819 | £899 |
| 5286SD | £459 | £539 | £619 |
| 5286HD40 | £639 | £719 | £799 |
| 3386HD40 | £859 | £939 | £1019 |
| 3386HD80 | £959 | £1039 | £1119 |
| 3386HD80/4Mb | £1059 | £1139 | £1219 |
| 4386HD80/4Mb | £1199 | £1279 | £1359 |

### OLIVETTI

| | VGA Mono | VGA Col |
|---|---|---|
| PCS86/20Mb | £599 | £729 |
| PCS286/40Mb | £759 | £839 |
| PCS286/80Mb | £819 | £899 |
| PCS286/120Mb | £979 | £1059 |
| PCS386SX/20Mb | £819 | £899 |
| PCS386SX/40Mb | £899 | £979 |
| PCS386SX/100Mb | £1249 | £1329 |
| PCPro-20SX/40Mb | £1599 | £1749 |
| PCPro-20SX/100Mb | £1949 | £2099 |

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| 286-12/40HD | £1099 |
| 386/16N-52Mb | £1249 |
| 386/20N-52Mb | £1399 |
| QS-16/40HD | £1399 |
| QS-16/80HD | £1699 |
| QS-20/40HD | £1699 |
| QS-20/80HD | £1899 |
| 386-25/80HD | £2399 |
| 386-25/170HD | £2799 |
| RS-25/170HD | £3399 |
| RS-25/330HD | £4399 |
| 486/25T-170HD | £4399 |
| 486/33T-170HD | £4999 |

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## LASER PRINTERS

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| Brother HL4** | £619 |
| Brother HL8E** | £1049 |
| Brother HL8PS** | £1549 |
| Brother HL8D** | £1499 |
| Canon LBP-IV** | £729 |
| Canon LBP8-III** | £1199 |
| Epson EPL4100** | £649 |
| Epson EPL7100** | £679 |
| Epson EPL7500** | £1299 |
| Fujitsu RX7100PS | £1299 |
| Fujitsu RX7200 | £1599 |
| Fujitsu RX7200D | £1899 |
| Fujitsu RX7300E | £2599 |
| Fujitsu WM800 | £999 |
| Fujitsu WM2200 | £5699 |
| HP Laserjet IIIP** | £739 |
| HP Laserjet III** | £1079 |
| HP Laserjet IIID** | £1799 |
| HP Laserjet IIISi** | £2599 |
| HP Laserjet IIISi Postscript | £3149 |
| IBM 4019E | £849 |
| Kyocera F800** | £999 |
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| M.Tally MT906** | £1079 |
| Nec SilentwriterII S60** | £799 |
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| Nec LC266** | £959 |
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| Olivetti 306 Postscript** | £1599 |
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| QMS Colourscript 100** | £4999 |
| Star LP8III** | £1199 |

## MODEMS

**DATAFLEX**

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|---|---|
| Stradcom Internal V21/V22 | £144 |
| Stradcom Pocket Modem | £162 |
| Biscom | £199 |
| Quadcom | £249 |
| Quadcom Pocket MNP5 | £299 |

**MIRACOM**

| | |
|---|---|
| WS3000 V21/V22/V23 | £199 |
| WS3000 V21/V22Bis/V23 | £299 |
| WS4000 V21/V23 | £109 |
| Keycard V21/V22/V23 | £207 |
| Keycard V21/V22Bis/V23 | £299 |
| Courier HST | £599 |

**DOWTY**

| | |
|---|---|
| Mayze 24 | £499 |
| Trailblazer | £849 |

## SCANNERS

**Hand Held**

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|---|---|
| Genius GS-4500 | £99 |
| Genius GS-B105G | £145 |
| Logitech Scanman 32 | £99 |
| Logitech Scanman 256 | £169 |

**OCR**

| | |
|---|---|
| Catchword | £109 |
| Read Write | £299 |

**Flat Bed**

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| Epson GT4000 | £1199 |
| Epson GT6000 | £1449 |
| Canon | £718 |
| HP Scanjet+ | £799 |
| HP Scanjet+ with I/F | £1099 |
| Panasonic RX506+I/F | £799 |
| Panasonic RX307+I/F | £899 |
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| ALT386/40 | £1299 |
| ALT386/80 | £1499 |
| ANB386/20 | £1079 |
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| 386/16-20/40Mb | £1399/1499 |
| 386/20-20/40Mb | £1499/1599 |
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| Supersport 286 40E | £1499 |
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| T1000XE | £659 |
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| T1200XE-20/40 | £1189/1299 |
| T2000-20/40 | £1349/1479 |
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| T2000SXE/60Mb | £2239 |
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| T3200SX/120 Colour | £4399 |
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| HP 7575 | £2999 |
| HP 7576 | £3999 |
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| Calcomp 1042GTA | £8565 |
| Calcomp 1043GTA | £6295 |
| Calcomp 1025AO | £4490 |

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| DXY1100 | £559 |
| DXY1200 | £709 |
| DXY1300 | £949 |

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| LX400 | £119 |
| LX850 | £169 |
| FX850 | £289 |
| FX1050 | £369 |
| EX1000 | £479 |
| LQ200 | £179 |
| LQ400 | £169 |
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| LQ870 | £399 |
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| LQ1060,Colour | £649 |
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| LQ1170 | £499 |
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| Swift 9 | £165 |
| Swift 9X | £229 |
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| Prodot 9 | £179 |
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| Swift Colour Option | £38 |

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| M1224 | £209 |
| M1709 | £349 |
| M1818 | £299 |
| M1824 | £349 |
| M1918 | £389 |
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| M2518 | £599 |
| M2524 | £669 |
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| KXP1695 | £349 |
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| KXP1654 | £499 |

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| MT87 | £339 |
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| DL 1200 | £399 |
| DL 3600 | £579 |
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| SL92 | £229 |
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| 80387/33 | £179 |
| 80487SX | £399 |

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| 286/16 | £119 |
| 386SX/16 | £179 |
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| 386/25Cache | £399 |
| 486/33-256Cache | £999 |

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| Prodesigner II | £189 |
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11

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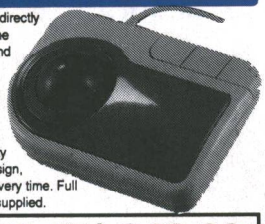


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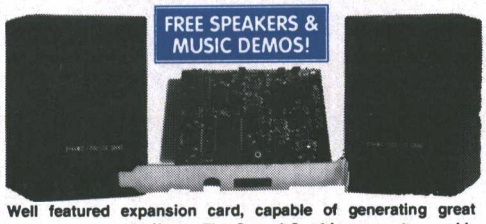

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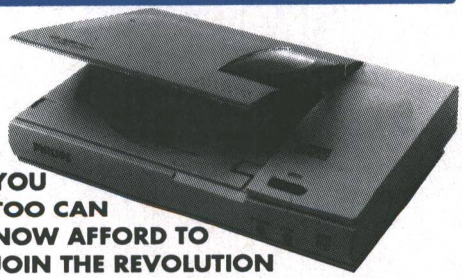
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| Maths Co-Processor Intel 8087-2 . 8MHz | (£84.26+VAT=) | £ 99.00 |
| Maths Co-Proc. Intel 80287-XL for '286 machines (8.10.12MHz) | (£64.00+VAT=) | £ 75.20 |
| Maths Co-Proc. Intel 80387sx-16 for '386sx machines. 16MHz | (£97.00+VAT=) | £ 113.98 |
| Maths Co-Proc. Intel 80387sx-20 for '386sx machines. 20MHz | (£106.00+VAT=) | £ 124.55 |
| Maths Co-Proc. Intel 80387 for '386 machines. (Please state which speed required (16, 20, 25 or 33) when ordering | (£162.00+VAT=) | £ 190.35 |
| NEC V30 replaces 8086 CPU, improves speed | (£21.23+VAT=) | £ 24.95 |
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| Amstrad SM2400 stand-alone modem (spec as MC2400) inc.cables | (£199.00+VAT=) | £ 233.83 |
| $25 Network Great value. easy to install. Tiny memory overhead | (£29.79+VAT=) | £ 35.00 |
| Laplink Professional, best PC to PC/Laptop file transfer kit, w/cable | (£119.00+VAT=) | £ 139.83 |
| Jumbo 120Mb Tape Streamer high quality internal unit with 120Mb or 60Mb capacity. Includes software & cable for twin drive PC's | (£237.45+VAT=) | £ 279.00 |
| Crystal Mouse the latest design in transparent accessories. High quality. Microsoft compatible. Adjustable resolution 50-800dpi | (£25.52+VAT=) | £ 29.99 |
| VIDI-PC Plus high quality video digitiser with plenty of features | (£126.81+VAT=) | £ 149.00 |
| VIDI-Chrome PC colour splitting software for B&W camera users | (£42.51+VAT=) | £ 49.95 |
| VIDI-RGB PC colour splitting hardware for colour camera users | (£59.53+VAT=) | £ 69.95 |
| Suncom Icontroller tiny joystick controller, easily attaches to keyboard. | (£59.57+VAT=) | £ 69.99 |
| Logitech Scanman/32 superior quality handy scanner. 100-400dpi | (£93.57+VAT=) | £ 109.95 |
| Logitech Scanman/256 Handy Scanner (256 grey scales) | (£187.19+VAT=) | £ 219.95 |
| Genius GS-B105GX Handy Scanner featuring 256 Greyscale capability. designed for use with Windows-3 | (£119.11+VAT=) | £ 139.95 |

## UNINTERRUPTABLE POWER SUPPLIES

You cannot afford to be without a U.P.S., with this range of UPSONIC products! Give total protection to your data investment with a U.P.S., to insure against data loss by power cuts, blackouts, brownouts, spikes and power surges. Can provide invaluable extra time to backup your data, or power down the equipment safely during mains failure. These units will work with any equipment, regardless of brand or specification.




***PC-MIGHT 25*** cost-effective. 250VA compact desktop unit .....(£ 95.32+VAT=) £ 112.00

***PC-MIGHT 35*** desktop unit as above. higher rating of 350VA.....(£152.34+VAT=) £ 179.00

***PC-MIGHT 55*** desktop unit as above. higher rating of 550VA.....(£211.91+VAT=) £ 249.00

***TOWER 600*** 600VA floor standing unit, for large computers, eg. *file-servers* with various connected peripherals .....(£407.66+VAT=) £ 479.00

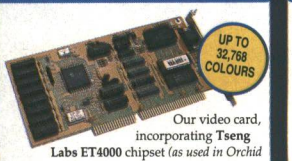
***TOWER 1250*** powerful 1250VA version of above TOWER unit.....(£611.91+VAT=) £ 719.00

NEW TELESALES OPENING TIMES : 9AM - 7PM (MONDAY-FRIDAY) • 9AM - 5.30PM (SATURDAY)

# More than just a great price...

## STANDARD FEATURES ON ALL MODELS

### SVGA CARD



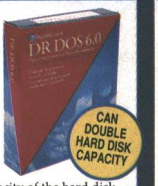

Our video card, incorporating **Tseng Labs ET4000** chipset *(as used in Orchid Pro Designer II)* and 1Mb of video RAM, offers beyond SVGA capability and high operational speed. A variety of drivers are provided for resolutions such as 1024x768 with up to 256 colours and 800x600 with up to 32,768 colours.

### HARD DISK



We use the latest versions of **NEC** low height IDE drives in our 40/105Mb models and **Conner** in the 200Mb. Maximum data transfer rate is 1.5Mb/sec and they have a 64k read-ahead buffer which works like a cache, speeding up both reading & access times. Quoted access time is 18ms, but because of the buffer they effectively average about 11ms. (Figures quoted 105Mb model)

### DR DOS 6.0



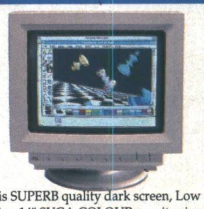

We supply **DR DOS 6.0** because the public love it. **Voted Best Software of '91** by *Computer Shopper* readers it has a wealth of advantages over MS-DOS. One important feature is the provision of *SpeedStor* which can almost double the capacity of the hard disk, eg. NEC 105Mb in a Vale PC would normally offer close to 200Mb !!
(MS-DOS V5.0 available as a no cost option)

### KEYBOARD



A full 102 key extended keyboard with proper tactile switches. It is the same as our popular 'Enhancer' keyboard of which *PC Plus* were moved to comment "it is the best keyboard ever to have passed through our hands".

### MONITOR



This SUPERB quality dark screen, Low Radiation 14" SVGA COLOUR monitor is non-interlaced in all modes except 1024x768 (which is designed for use on large screen, 17" plus, monitors). The clarity and pin point precision of this monitor, manufactured for us by **Tatung**, really are at the top of its class. It betters EN55022 radiation standards, and has a dot pitch of 0.28mm, so your eyes won't suffer.

### Other Features...

All systems available in **Mini Tower** or **Desktop** form • Digital display with Turbo/Reset switches and Keylock • Both **5.25" and 3.5"** Drives • 200+ Watt Power Supply • 2 Serial, 1 Parallel & 1 Game port • Latest 2-level **AMI PROFESSIONAL BIOS**

### 30 DAYS MONEY BACK GUARANTEE

We are so confident that you will be delighted with your Vale PC that should you, *for any reason at all*, find that it does not satisfy your needs, we will COLLECT it and refund your money in full.

### LIFETIME TECHNICAL SUPPORT

As an owner, you will be provided with access to an exclusive *VALE HOTLINE* support number, staffed by knowledgeable people with a full record of your system and customer history. Lines open 9am until 6pm.

### 2 YEARS ON-SITE MAINTENANCE

This agreement is with **A.E.M.** who operate to BS5750 standard and covers all systems for two years. In the unlikely event of a problem arising you can be sure it will be dealt with efficiently. The service can be further extended if so desired.

## Why *Vale* from Evesham Micros?

**QUALITY...** Some of the finest quality proven components from suppliers like *NEC, Citizen, Intel, Conner, Tseng Labs* and *Chips & Technology* have been carefully selected to achieve a high quality, high performance product.

**OUR SECRET IS SERVICE...** In a recent poll the readers of *Computer Shopper* magazine voted *Evesham Micros* joint winner of **"Best Customer Service"** award. Need we say more? Our customers have done it for us.

**CUSTOMER CARE...** Don't forget that *Evesham Micros* has been looking after its customers for almost nine years now, has won several consumer awards and intends to win more.

**SELECTION...** Our face-to-face retail experience has made us never forget that *the customer comes first*. That's why we offer such a vast range of hardware and software at competitive prices.

**READY TO RUN...** All our systems have been fully 'burned in' and subjected to a rigorous test procedure. We even format the hard disk and load DOS so that you can get down to serious business *without delay*.

**FAST DESPATCH & DELIVERY...** We endeavour to despatch all orders as quickly as possible. Many configurations are available pre-built from stock and can be shipped immediately; others we aim to despatch in days, not weeks. All systems are shipped by *FEDERAL EXPRESS* at no extra charge.

**LIFETIME LABOUR WARRANTY...** Our guarantee is quite simple, but very friendly. All PC's include 2 years on-site maintenance, lifetime warranty on labour (return to Evesham) & extendable on-site at realistic prices.




### Vale 386SX ➡ 16

*ideal first '386*

Why settle for '286 computing? With '386SX models of this sophistication available at such attractive prices, you would be foolish to settle for less.

- 16Mhz Intel 386SX processor
- *Chips & Technology* chipset
- 1Mb high speed zero wait state RAM expandable to 8Mb on board
- 4 full Expansion slots free
- SVGA Low Radiation Colour Monitor
- 2 Serial, 1 Parallel & 1 Game ports
- *Landmark V2.0* speed of 20Mhz
- *Landmark V1.14* speed of 21Mhz

**40MB** £769.00 +VAT = £903.58 INC.
**105MB** £869.00 +VAT = £1021.08 INC.
**200MB** £1069.00 +VAT = £1232.58 INC.
3RD Year O.S.M. £99.00 +VAT = £116.33

### Vale 386SX ➡ 25 32K CACHE

*perfect for WINDOWS™*

With its genuine 25Mhz AMD processor, on board Cache and superb *Chips & Technology* chipset, this must be about the fastest 386SX around. We feel it must offer the best *Windows* performance available for less than £1000.

- Genuine 25Mhz AMD 386SX processor
- 32K Cache memory on board
- 2Mb high speed zero wait state RAM expandable to 8Mb on board
- 4 full Expansion slots free
- SVGA Low Radiation Colour Monitor
- 2 Serial, 1 Parallel & 1 Game ports
- *Landmark V2.0* speed of 36Mhz
- *Landmark V1.14* speed of 37Mhz

**40MB** £899.00 +VAT = £1056.33 INC.
**105MB** £999.00 +VAT = £1173.83 INC.
**200MB** £1199.00 +VAT = £1408.83 INC.
3RD Year O.S.M. £119.00 +VAT = £139.83

### Vale 386DX ➡ 40 128K CACHE

*as fast as you can go in a '386*

A 40Mhz '386DX machine with 128K of cache memory. This machines scorches to 62.4Mhz on the *Landmark V2.0* test, about as fast as is possible with a '386DX !

- 40Mhz AMD 386DX processor
- 128K Cache memory on board
- *UMC* Chip Set
- 4Mb high speed zero wait state RAM, expandable to 32Mb on board
- 6 full Expansion slots free
- SVGA Low Radiation Colour Monitor
- 2 Serial, 1 Parallel & 1 Game ports
- *Landmark V2.0* speed of 62.4Mhz
- *Landmark V1.14* speed of 65.7Mhz

**40MB** £1069.00 +VAT = £1256.08 INC.
**105MB** £1169.00 +VAT = £1373.58 INC.
**200MB** £1369.00 +VAT = £1608.58 INC.
3RD Year O.S.M. £139.00 +VAT = £163.33

### Vale 486SX ➡ 20 256K CACHE

*upgrade to a full '486 later!*

486SX PC's are becoming much more popular recently - not surprising when you consider their processing power and the fact that this one can be upgraded to 486DX 33Mhz when required.

- 20Mhz Intel 486SX processor
- 256K Cache memory on board
- *Opti* Chip Set
- 4Mb high speed zero wait state RAM, expandable to 32Mb on board
- 6 full Expansion slots free
- SVGA Low Radiation Colour Monitor
- 2 Serial, 1 Parallel & 1 Game ports
- *Landmark V2.0* speed of 66.9Mhz
- *Landmark V1.14* speed of 90Mhz

**40MB** £1149.00 +VAT = £1350.08 INC.
**105MB** £1249.00 +VAT = £1467.58 INC.
**200MB** £1449.00 +VAT = £1702.58 INC.
3RD Year O.S.M. £149.00 +VAT = £175.08

### Vale 486DX ➡ 33 256K CACHE

*the power and the glory...*

The answer to the power user's dreams – very fast and with the benefit of built-in co-processor. It achieves 112Mhz on the *Landmark V2.0* system test & 152Mhz on the 'CPU only' test.

- 33Mhz Intel 486DX processor
- 256K Cache memory on board
- *Opti* Chip Set
- 4Mb high speed zero wait state RAM, expandable to 32Mb on board
- 6 full Expansion slots free
- SVGA Low Radiation Colour Monitor
- 2 Serial, 1 Parallel & 1 Game ports
- *Landmark V2.0* speed of 112Mhz
- *Landmark V1.14* speed of 152Mhz

**40MB** £1299.00 +VAT = £1526.33 INC.
**105MB** £1399.00 +VAT = £1643.83 INC.
**200MB** £1599.00 +VAT = £1878.83 INC.
3RD Year O.S.M. £169.00 +VAT = £198.58

## OPTIONS

| | | | |
|---|---|---|---|
| Big Tower Case (230+ Watt Power Supply) instead of Mini Tower / Desktop style case, add .. | £50.00 +VAT= | £58.75 | |
| 17" SVGA Low Radiation Colour Monitor instead of standard 14" model, add | £499.00 +VAT= | £586.33 | |
| Vale '386sx-16 Upgrade to 2Mb, add | £34.04 +VAT= | £40.00 | |
| RAM Upgrade beyond 2Mb, per 2Mb add | £68.09 +VAT= | £80.00 | |
| Internal 120Mb Tape Streamer | £229.00 +VAT= | £269.08 | |
| Internal CD-ROM (including Controller Card) | £329.00 +VAT= | £386.58 | |
| Microsoft Windows 3 | £50.00 +VAT= | £58.75 | |
| Microsoft Windows 3 & Mouse | £69.00 +VAT= | £81.08 | |
| Maths Co-Processor for Vale '386sx-16 | £69.00 +VAT= | £81.08 | |
| Maths Co-Processor for Vale '386sx-25 | £99.00 +VAT= | £116.33 | |
| Maths Co-Processor for Vale '386dx-40 | £149.00 +VAT= | £175.08 | |
| Vale 486SX upgrade to full 486DX (33MHz) specification, exchange fitted on-site | £250.00 +VAT= | £293.75 | |

➤ ➤ ➤ PLEASE TURN OVER FOR FURTHER OFFERS AND ORDERING INFORMATION ➤ ➤ ➤

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# Evesham Micros

☆ ALL PRICES INCLUDE DELIVERY ☆
EXPRESS COURIER DELIVERY
(UK MAINLAND ONLY) £6.50 EXTRA

# CRAZY PRICES
## ON ALL AMSTRAD HARDWARE!

## AMSTRAD PC2386 - '386DX SUPERDEAL

- FULL SPECIFICATION
- *GENUINE* 20MHZ 80386 DX CPU
- 65MB HIGH SPEED HARD DISK
- 4MB RAM STANDARD
- 4 FREE EXPANSION SLOTS
- MS-DOS 4.011
- MOUSE
- FULL MANUALS

*PRICES IN BRACKETS EXCLUDE VAT.*

ALL 2386 PRICES INCLUDE 12 MONTHS ON-SITE MAINTENANCE

| | PC2386 HD65 |
|---|---|
| VGA MONO | (765.11) 899.00 |
| VGA COLOUR | (850.21) 999.00 |

**HURRY WHILE STOCKS LAST!**

## AMSTRAD PC1640 DD/MD
WITH 'LOCOSCRIPT-PC'



***LIMITED STOCKS*** **available of PC1640's featuring TWIN DRIVES, MONO MONITOR and 'LOCOSCRIPT-PC' !**

**Only (£237.45+VAT=) £279.00**

*ALSO AVAILABLE WITH 32MB HARD DISK CARD FITTED FOR ONLY* (£407.66+VAT=) £479.00

## AMSTRAD PC3386sx

AMSTRAD 3386 MODELS INCLUDE:
- *WINDOWS 3*
- MOUSE
- 3.5" DRIVE

Prices in lighter type Exclude VAT

| | 3386sx HD40 | 3386sx HD80 |
|---|---|---|
| 12" MD | 637.45 749.00 | 850.21 999.00 |
| 14" CD | 722.55 849.00 | 935.32 1099.00 |
| 14" HRCD | 807.66 949.00 | 1020.43 1199.00 |

N.B. '3386sx HD80' Model includes 4Mb RAM as standard.

1 YEAR ON-SITE MAINTENANCE AVAILABLE FOR PC3386 MODELS - PLEASE ADD £50.21 PLUS VAT

## AMSTRAD 5000 SERIES

PRICES IN LIGHTER TYPE EXCLUDE VAT

| | 12" MD | 14" CD | 14" HRCD |
|---|---|---|---|
| 5086 HD40 | 339.57 399.00 | 424.63 499.00 | 509.79 599.00 |
| 5286 HD40 | 467.23 549.00 | 552.34 649.00 | 637.45 749.00 |

*FREE* WITH ALL 5086's MICROSOFT WORKS 2

*FREE* WITH 5286 HD40: LOTUS 1-2-3 V2.2

**5286 GAMES PACK** Includes 40Mb HD, 14" CD, Sound Card, 'Links', 'F15 Strike Eagle II', 'Prince Of Persia' & 'Microsoft Works 2') ONLY (637.45+VAT=) £749.00

## SPECIAL! AMSTRAD PCW9512
### BARGAIN WORDPROCESSOR

***LETTER-PERFECT WORDPROCESSING SYSTEM FEATURING 'LOCOSCRIPT' AND HIGH QUALITY DAISYWHEEL PRINTER***



Classic wordprocessor combination, including 512K computer, 'Locoscript-2', plus a dedicated, high quality 15" daisywheel printer generating perfect quality letters every time. Powerful software features Spellchecker plus full Mail Merge facilities.

**Only (£322.55+VAT=) £379.00**

**PCW9256 Wordprocessor** inc.Dot Matrix Printer ...(£ 314.04+VAT=) £ 369.00
**PCW9512+ Wordprocessor** inc.Sheet Feeder .....(£ 399.15+VAT=) £ 469.00
**PCW9512+ Wordprocessor** inc.BJ-10E Printer.....(£ 492.77+VAT=) £ 579.00

## 3½" INTERNAL DRIVES
### For Amstrad 1512/1640 S.D. Models

Full 720K capacity internal floppy drives to suit any Amstrad 1512 or 1640 Single Drive PC. Plugs straight into PC using existing connections. Supplied complete with mounting bracket and full fitting instructions.

**(£51.06+VAT=) £59.99**

## AMSTRAD ALT LAPTOPS

***FREE CANON BJ-10E INKJET PRINTER WITH AMSTRAD ALT MODELS!***

**ALT286** (40Mb HD, 1Mb RAM) .....(£850.21 +VAT=) **£999.00**
**ALT386sx** (80Mb HD, 2Mb RAM ...(£1360.85 +VAT=) **£1599.00**

| | |
|---|---|
| External 5.25" Drive with PSU | (£127.62+VAT=) £149.95 |
| Carrying Case for ALT | (£ 29.79+VAT=) £ 35.00 |
| ALT 2MB RAM Upgrade | (£68.09+VAT=) £ 80.00 |
| ALT 4Mb RAM Upgrade | (£136.17+VAT=) £160.00 |

## NEW! AMSTRAD FX6000AT
### COMPACT DESKTOP FAX MACHINE



***TOTAL OFFICE COMMUNICATIONS ON YOUR DESK - COMBINES FAX, PHONE, ANSWERING MACHINE AND LOCAL COPIER INTO ONE COMPACT UNIT!***

*Amstrad have really got this one right!* FX6000AT is a truly superb quality fax machine, made in Japan. It is designed for all your business needs, including answer machine with remote message controller, copy facility, MERCURY compatibility, plus speed dial numbers.

**Only (£382.13+VAT=) £449.00**

*- PRICE INCLUDES 12 MONTHS ON-SITE WARRANTY -*

## 3½" EXTERNAL DRIVES
### For ANY Amstrad PC1512/1640



**No Expansion cards used - even works with DD and HD models !**

Suits *all models* of Amstrad 1512 or 1640, including Double Drive and Hard Disk versions. Requires no expansion area or additional PSU - it just switches between internal drive B and itself. Full 720K formatted capacity per 3.5" disk. Simple installation procedure - full instructions supplied.

**Only (£80.81+VAT=) £94.95**

## olivetti 16Mhz PCS286 PCS386sx

## NEW LOWER PRICES!

**FREE WITH ALL MODELS :**
- ✓ 12 MONTHS ON-SITE MAINTENANCE
- ✓ PS/2 COMPATIBLE MOUSE+S/WARE
- ✓ *MICROSOFT WORKS* SOFTWARE
- ✓ 'TOP 10 SOLID GOLD' GAMES S/WARE

Prices in lighter type Exclude VAT

| | SD 40MB | SD 100MB |
|---|---|---|
| PCS286 MONO | 699.00 821.33 | N/A N/A |
| PCS286 COLOUR | 779.00 915.33 | N/A N/A |
| PCS386sx MONO | 925.00 1086.88 | 1139.00 1338.33 |
| PCS386sx COLOUR | 999.00 1173.83 | 1199.00 1408.83 |

**'MICROSOFT WORKS'** SOFTWARE INCLUDES :
- WORDPROCESSOR
- DATABASE
- SPREADSHEET
- BUSINESS GRAPHICS
- COMMUNICATIONS

**RAM UPGRADES**
2Mb...(£68.09+VAT=) £80
4Mb...(£136.17+VAT=) £160

## PC SOFTWARE

*PLEASE SPECIFY EITHER 5.25" OR 3.5" DISK WHEN ORDERING*

| | | |
|---|---|---|
| **Microsoft MS-DOS Version 5.0 Upgrade** | (£ 50.21 +VAT=) | £ 59.00 |
| **DR-DOS Version 6** | (£ 62.98 +VAT=) | £ 74.00 |
| **Lotus 1-2-3 Version 2.3** | (£ 289.00 +VAT=) | £ 339.58 |
| **Word Perfect Version 5.1** | (£ 276.60 +VAT=) | £ 325.00 |
| **Microsoft Quick BASIC** | (£ 51.91 +VAT=) | £ 61.00 |
| **Microsoft Quick C** | (£ 51.91 +VAT=) | £ 61.00 |
| **Borland Turbo C++ 2nd Edition** | (£ 56.17 +VAT=) | £ 66.00 |
| **Borland Turbo C++ 2.0** | (£ 237.45 +VAT=) | £ 279.00 |
| **Borland Turbo Pascal Professional** | (£ 126.81 +VAT=) | £ 149.00 |
| **PC Tools Deluxe Version 7** | (£ 89.36 +VAT=) | £ 105.00 |
| **Microsoft Flight Simulator Version 4** | (£ 31.91 +VAT=) | £ 37.50 |
| **Microsoft Windows Version 3** | (£ 63.83 +VAT=) | £ 75.00 |
| **Microsoft Word for Windows** | (£ 288.51 +VAT=) | £ 339.00 |
| **Microsoft Windows Entertainment Pack** | (£ 25.49 +VAT=) | £ 29.95 |
| **Borland Turbo Pascal for Windows** | (£ 120.85 +VAT=) | £ 142.00 |
| **Lotus 1-2-3 For Windows** | (£ 382.13 +VAT=) | £ 449.00 |
| **Word Perfect for Windows** | (£ 249.00 +VAT=) | £ 292.58 |

## ENHANCER 101 KEYBOARD



*"it is the best keyboard ever to have passed through our hands ... this product deserves a wholehearted recommendation and sets the standard for other manufacturers to aspire to."*
*- PC PLUS* magazine

Strong and sturdy, high quality AT-style keyboard featuring tactile feedback ('click') keyswitches. Two versions available: one compatible to all PC XT/AT machines (102 keys), and one designed specifically for all Amstrad 1512/1640 machines (101 keys).

**PC XT/AT VERSION** .....(£42.51 +VAT=) £49.95
**AMSTRAD 1512/1640 VERSION**...(£63.79 +VAT=) £74.95

## SVGA MONITOR & CARD
### High Precision 14" Colour Display System



Our 14" Colour monitor with Super VGA card has to be the most attractive Colour Display kit available for the PC. It includes a SUPERB quality dark screen, low radiation 14" SVGA Colour monitor, which is non-interlaced in all modes except 1024x768. The clarity and pin point precision of this monitor, manufactured for us by Tatung, really are at the top of its class. It betters EN55022 radiation standards, and has a dot pitch of 0.28mm, so your eyes won't suffer. The system also includes an SVGA card which features the highly rated **Tseng Labs ET4000** chipset (as used with Orchid Pro Designer II) containing 1Mb RAM. It offers beyond SVGA capability and high operational speed. A variety of drivers are provided for resolutions such as 1024x768 with up to 256 colours and 800x600 with up to 32,768 colours available.

**Monitor & Card (£299.00+VAT=) £351.33**
SVGA 14" Colour Monitor on its own, inc. cable ...£219.00+VAT= £257.33
Super VGA Card on its own, including software....£ 89.00+VAT= £104.58

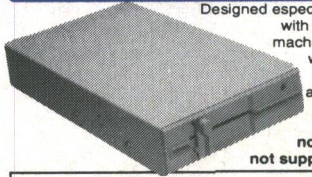
## HIGH DENSITY EXTERNAL DRIVES

- ☆ **High quality 1.2Mb/360K and 1.44Mb/720K capacity drives, complete with high density mini half-card controller**
- ☆ **Works with virtually any PC with one free expansion slot inc. Olivetti PCS series machines. Requires DOS 3.3 or greater**

Please Note : The 3.5" 1.44Mb Version is not compatible to Amstrad PC1512/1640

**(£110.60 +VAT=) £129.95** SPECIFY *EITHER* 3.5" *OR* 5.25" DRIVE WHEN ORDERING

## 5¼" EXTERNAL DRIVES
### For Amstrad PC2000 Series Machines



Designed especially for full compatibility with Amstrad PC2000 series machines, this drive connects with the base unit's drive sockets. Two versions available; 360K or 1.2Mb (Please state version when ordering). **Please note: PC2086 models do not support the 1.2Mb version.**

**360K VERSION**.....(£42.51 +VAT=) £49.95
**1.2Mb VERSION**.....(£76.55 +VAT=) £89.95

# PRINTERS

All Prices Include Delivery and Connection Cable

Gold Star REGISTERED DEALER

EVESHAM MICROS STAR PRINTERS INCLUDE
12 MONTHS ON-SITE WARRANTY

## STAR LC20 9-Pin Printer



NEW SUCCESSOR TO THE STAR LC-10, WITH MANY FEATURES AND A FASTER PRINT SPEED

Providing superlative paper handling, four excellent NLQ fonts and a new super-fast print speed of 180cps in draft and 44 cps in NLQ, the LC20 appropriately supercedes the phenomenally successful LC10 !

(£119.14+VAT=) £139.99

## SPECIAL!! STAR FR-15
PROFESSIONAL SERIES COLOUR PRINTER



PROFESSIONAL SERIES 9-PIN 136-COLUMN PRINTER INCLUDING COLOUR UPGRADE !!

☐ Versatile and rugged ☐ High Performance Professional Series 9-Pin Printer with Colour Upgrade ☐ 300 cps output in draft, 76 cps in NLQ mode (16 resident NLQ fonts!!) ☐ Full control from front panel ☐ Huge 31k buffer ☐ Advanced Paper Parking ☐ Optional Sheet Feeder

(£212.76+VAT=) £249.99 HURRY WHILE STOCKS LAST!

| | | |
|---|---|---|
| **Star LC200 COLOUR** (Colour version of LC-10) | £170.20+VAT= | £ 199.99 |
| **Star LC24-10** good low price 24pin printer | £170.20+VAT= | £ 199.99 |
| **Star LC24-200** improved version of LC24-10 | £204.25+VAT= | £ 239.99 |
| **Star LC24-200C** 7-Colour version of above | £229.78+VAT= | £ 269.99 |
| **Sheet feeder** for any of the above (please state model) | £ 55.28+VAT= | £ 64.95 |
| **Star LC15** wide carriage, faster version of LC-10 | £203.40+VAT= | £ 239.00 |
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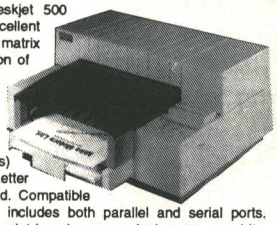
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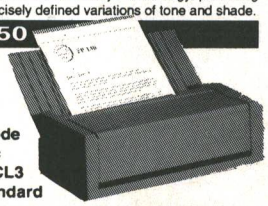
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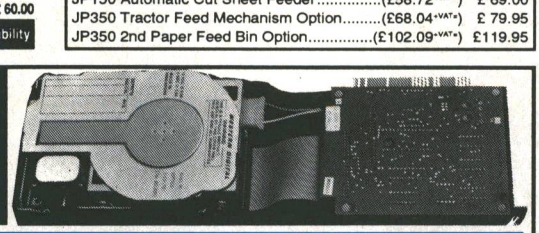


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# MASTER

**Matthew McGrath and Ged Start look at the burgeoning laser printer market and put a mixture of PostScript and non-PostScript machines through their paces**

**LASER printers have quickly and quietly conquered the world. Once regarded as the ultimate in quality printing for the office they are now an indispensable part of business.**

**While lasers were once uniformly bulky you can now buy powerful machines that occupy less desk space than a PC. The basic mechanics of most printers' operation is the same, but we also look at a pair of LED models, which although not true lasers, are regarded the same.**

**Hewlett-Packard still remains the standard for other printers to emulate, but more and more machines are including PostScript as an option. This requires more memory, but the availability of cheap memory brings this top-end page description language within the grasp of small business and home users.**

**All the machines in this review output at 300 dots per inch and differences in print quality are quite small. We have concentrated on other aspects of the printers that will affect performance and buying decisions such as onboard memory, fonts, upgradability and running costs.**

**In common with all hardware the price of laser printers has fallen dramatically in the past year. Just 12 months ago you could buy a HP LaserJet clone for just under £2,000. Now they sell for half that figure.**

**PostScript printers cost £3,000 a year ago and can now be bought for £1,500. If you're looking to buy a laser printer the time has never been better or the choice wider.**

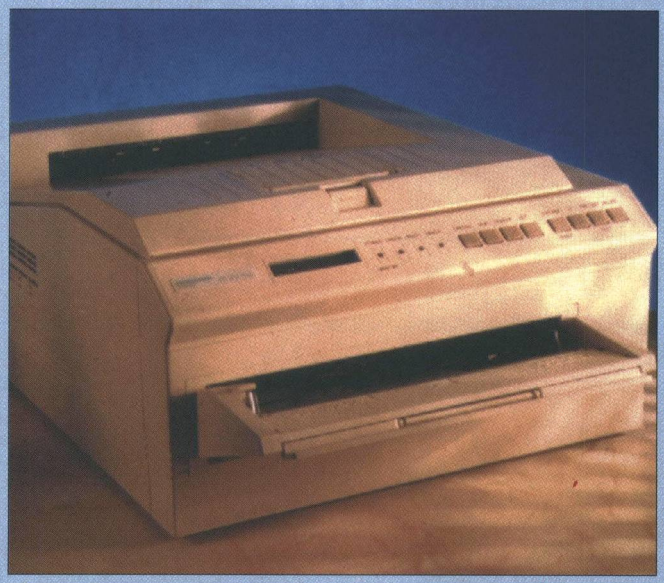
## Mannesmann Tally MT 904 Plus: A mini office workhorse

THE appearance of the Mannesmann Tally MT 904 Plus confirms the impression made by the price. Selling at £1,099 this machine is one the cheapest on test and is a basic, no frills four page a minute printer that performs routine tasks excellently.

When the printer arrived at this office it had the appearance of being well used. Additionally it came without manuals. However, the construction is beneficial to its acceptance as a mini office workhorse. It takes up very little space on the desktop and is not cluttered by paper trays and bins.

What it does have is a simple detachable paper tray. Paper is collated on top and can be banked on a little hinge that forms part of the fascia when not in use. Inside the casing the toner cartridge and drum are separate entities, but need to be assembled externally before being inserted into the machine.

Mannesmann Tally say that the MT 904 Plus examines pixels a line at a time for segment changes to determine how to adjust the laser spot and this, claim the company, gives sharper and more rounded shapes for graphics and text.



This printer comes with four resident emulations including PCL level 5 as standard. Built into the command set of PCL level 5 is HPGL level 2, the standard for plotters and graphics emulation. It's possible to upgrade to PostScript through a cartridge which slots in under a rather flimsy cover.

Included as standard are 14 bitmap and eight resident scalable fonts. The company claim the resident fonts can be enlarged up to 999 points. Fonts for office applications, comprising Courier and CG Times, and line printer for spreadsheets are included.




Paper feed is from the 100-sheet cassette. Describing it as a cassette is a bit of a misnomer since it just sits under the paper. It offers no protection against dust and damp gathering on the paper.

Control from the front panel is more complex than it looks though the basic emulation and paper set are self explanatory. In action this proved a fast and reliable printer that handled graphics and large files well for a machine with only an 8k buffer.

The basic nature of the components also mitigates against this machine, but if you're looking for a basic and reliable small office printer you could do worse than look up the Mannesmann Tally.

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**All systems include:** 1MB RAM, **44MB Hard Disk,** 14" Colour Super VGA Monitor 1024x768 (0.28 dot pitch), 16-Bit SVGA Card 1MB, desktop case with 200W PSU, 3½" 1.44MB Floppy Drive, 2 serial, 1 parallel, 1 games ports, 102 Key Enhanced Keyboard, 12 months on-site warranty (extendable to three years).

**Options:** Extra RAM **£29** per MB, 1.2MB Floppy **£39**, Mouse **£15**, 89MB Hard Disk add **£75**, 130MB Hard Disk add **£145**, 210MB Hard Disk add **£295**, MS-DOS 5 **£49**, Windows 3 **£49**, Mini-Tower Case add **£15**, Tower Case add **£45**.

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## Seikosha OP-104: A cost-effective machine to run

THE Seikosha OP-104 is basically the same printer as the Mannesmann Tally, but with some slight differences. The most immediate one is pricing. This four pages a minute printer has a recommended retail price of £940, but has only half a megabyte of ram.

It offers a lot of options including a resident HP LaserJet IIP emulation, but you can have Epson FX850, Diablo 630 and several others on cartridge. Resident fonts number 14, but these can be supplemented by HP font cartridges among others.

Seikosha's printer operates at the standard 300 dots per inch. Memory can be upgraded in units of 1Mb to a maximum of 2.5Mb. In all other respects this is the Mannesmann Tally printer featuring the same toner and developer line up.

In terms of running costs the Seikosha does remarkably well. From our calculations running it costs approximately 1.45p a page based on the manufacturers' prices for the consumables.

This makes it a cost-effective machine to run, but upgrading the memory through the manufacturers is expensive at £175 per 1Mb.

With large amounts of ozone being generated by the high voltage process of printing, the filter must be replaced at least once a year. It is also recommended that you change it if there is a strong smell of ozone. The filter is is located beside the toner cartridge and slips out with ease.

Seikosha claim that one of the most distinctive features of their printer is the straight pass paper handling mechanism, which enables high capacity throughput and supposedly eliminates paper jamming and paper curl.

This approach accommodates overhead projector transparencies, envelopes and labels.

Paper handling was excellent, but is limited to four pages a minute. So was that of the Mannesmann Tally without any of the inflated claims of the Seikosha.

The operating panel is also the same as the Mannesmann



Tally except for a change in colour. In terms of performance there was nothing to separate the two.

The monthly duty cycle is rated at 2,500 sheets and it claims a durability of five years or 150,000 pages. This is quite acceptable for a small office printer, but may mitigate against its purchase for the slightly larger business user.

While slightly more expensive to purchase, the Seikosha is a reliable and good quality printer that is cheap to run and easy to move.

For straightforward printing of text or spreadsheets this is ideal, but for graphics you may need to look at other solutions or upgrade the ram.

## Samsung SL-1081A: Built for long-term office use

THE Samsung SL-1081A is an eight pages a minute machine that is as strong and robust as you are likely to find. It comes with 512k of memory and has a retail price of £891.

It emulates the Hewlett-Packard LaserJet II and has 24 resident fonts with additional fonts and emulations available as options. The design is slightly unusual with the paper feeding from a tray on top and coming out at the front.

Two paper bins feature on this model with only one 250 page cassette supplied as standard. The collating tray at the front is a weakness. In contrast to the rest of the machine it is a flimsy and unreliable attachment.

The control panel is different to some of the other models on test in that it is inlaid into the fascia and is in no way obtrusive. The commands are simple and easy to use.

Printers have slimmed down in weight over the past couple of



years, but the Samsung still weighs in at a sturdy 48 pounds. Most of this seems to in the top half of the machine as it takes a bit of effort to open.

Without the toner and drum the inside is very bare. Installing these presented some difficulties – as they are separate units they need to be carefully handled. Installing the felt cleaner also presented some trouble as it wasn't that clear where it went.

In operation the Samsung proved itself quite a fast printer and in terms of noise it was one of the quieter ones on test – always a consideration in a busy office.

PC TODAY RECOMMENDED

This is a printer built for long-term office use with a recommended duty cycle of 5,000 sheets a month and a lifespan of over 300,000 pages.

Onboard memory can be enlarged to a maximum of 4.5Mb and to really do justice to its intended market it needs a megabyte at least.

However, when price considerations are taken into account the SL-1081A offers tremendous value for money and can be considered a premium purchase for any office needing a durable and good quality print workhorse.

## Oki OL400: Not the best but worth considering

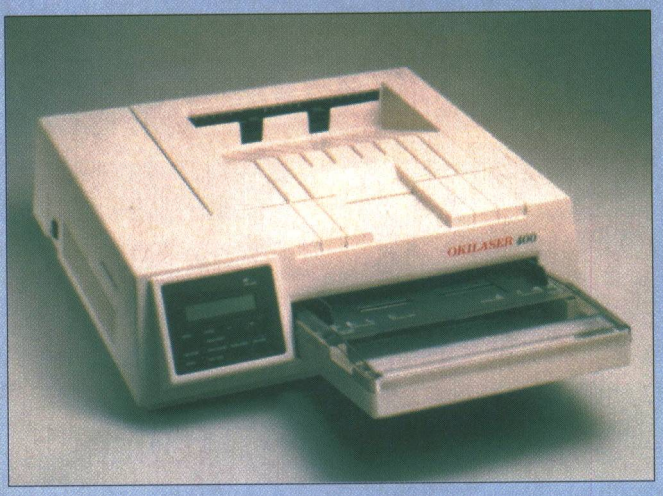
THE first thing you will notice about the OL400 is its weight, or more specifically its lack of it. When we first received the box we thought it was empty.

This unusual characteristic is because, like the other Oki on test, it is not a laser printer at all. Instead it uses a bank of high intensity LEDs which reduces size and mass dramatically.

Other than this difference the operating principles remain the same. Setting up the machine for the first time reveals some peculiar traits that seem strange when compared to the more straightforward arrangements of the other machines.

The toner cartridge in particular was awkward as it required a certain amount of self assembly before it could be installed.

Locating the assembled mechanism was easy enough, but the printer would not work until the locking tabs on the toner cartridge are released.




These are very stiff and it is easy to think that they have been released when they are only half open.

Initially this caused some confusion as the LCD panel on the front of the machine was continually displaying the Out of Toner error message.

Once this situation was resolved the printer acquitted itself admirably. It was very quiet in operation and the print quality was up to standard.

Four pages a minute on continuous printing is certainly achievable. The control panel was not the easiest to use, but a brief consultation with the manual solved most difficulties.

The OL400 is supplied with three manuals, each one for use at different stages. The first is the Setup Guide which is designed to get you running.

Second is a troubleshooting booklet that addresses most of the common faults and problems that occur. The final manual is an overall handbook that covers material from both of the other books and supplies more in-depth technical information.

This system would work perfectly if they had bothered to print alphabetical indices in the back of the books. Missing such an obvious component caused a lot of frustration – detailed contents at the front are just not enough.

Overall the Oki is a serviceable machine and its portability will make it popular in small offices. Its flaws are more irritating than detrimental and it should have a good life expectancy. Not the best, but worth considering especially at its current price.

## Hewlett Packard LaserJet III: Designed and printing with quality

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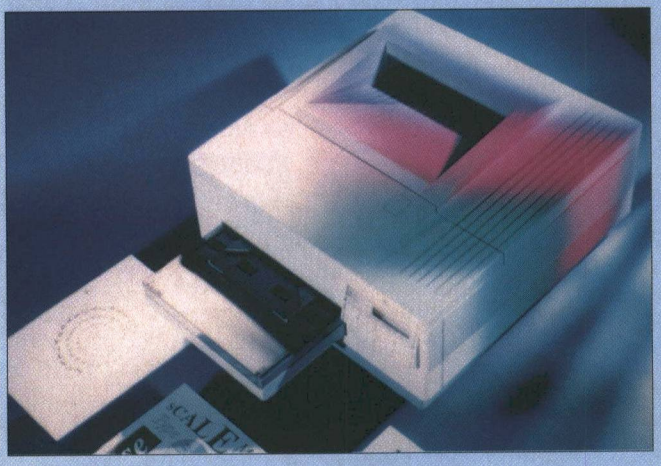
THE Hewlett-Packard LaserJet III bears a heavy burden in terms precedent. HP printers dominate the laser market accounting for 48.6 per cent by value. This HP LaserJet III will definitely add to this dominance.

It's big and square and weighs in at 48 pounds. An optional PostScript cartridge is available and also a scalable typeface one giving you everything that you'll need in terms of of printing.

Inside this eight page a minute printer you'll find the familiar Canon engine with its combined drum and toner kit and with all parts necessary for cleaning easily accessible.

It comes with 1Mb of memory as standard, but the self-test printout showed an additional 2Mbs had been installed in the review machine.

Bitmapped fonts number 14. The scalable fonts cartridge is accompanied by screen fonts disks which can be easily installed on your PC. The manual warns that at this time few software packages support custom screen fonts. In order to



make custom screen fonts you must use HP's Type Director 2.0 or hope that your software supports the intellifont scaling technology.

Many problems you may have with this cartridge can be overcome through using the optional PostScript cartridge. Working in PostScript mode the LaserJet is quite considerably slower than normal mode. You'll have to decide if the wait is worth it.

Resolution enhancement technology is included that refines the print quality of characters and graphics by attempting to smooth the edges of the printed image.

This certainly adds to the quality of output and gives the Hewlett-Packard a definite advantage over the competition. One of the disadvantages is that it's incompatible with some interface boards made by other manufacturers.

Control panel commands are clear and easy to use. Varying the amount of time a key is depressed toggles the commands on keys with more than one function.

With the addition of either the PostScript or the scalable font cartridge your test printout gives precise breakdown of what's in each cartridge slot.

The panel itself is well designed, being clear yet unobtrusive. This quality is reflected throughout the printer. The paper cassette is large and solid, sinking deep into the printer so that accidental bumps will not dislodge it. The output area on the top of the machine is similarly large and can cope with a large amount.

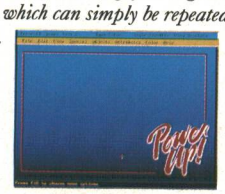
Designed with quality and printing with quality the Laserjet III will dominate the business market for some time to come.

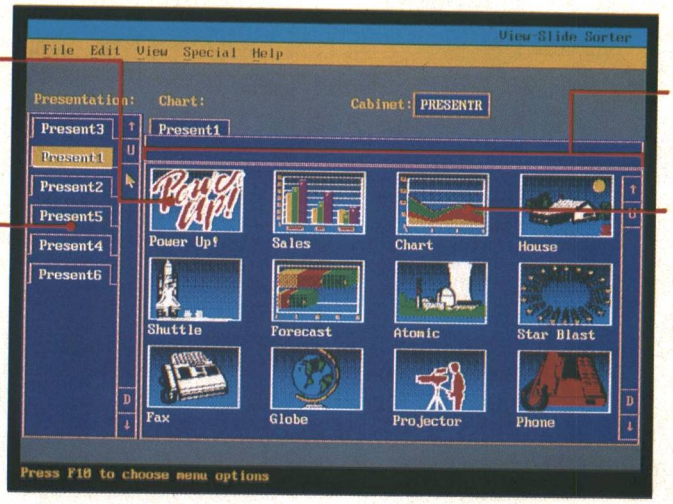
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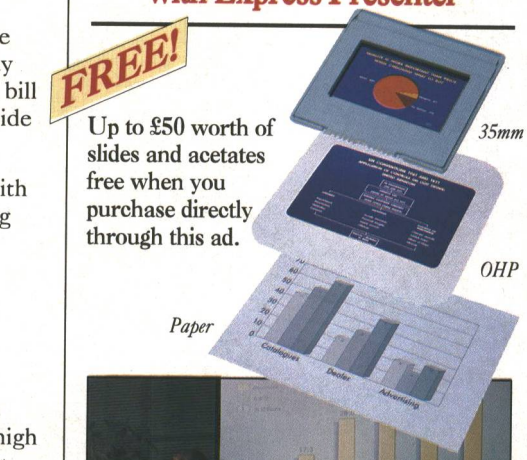
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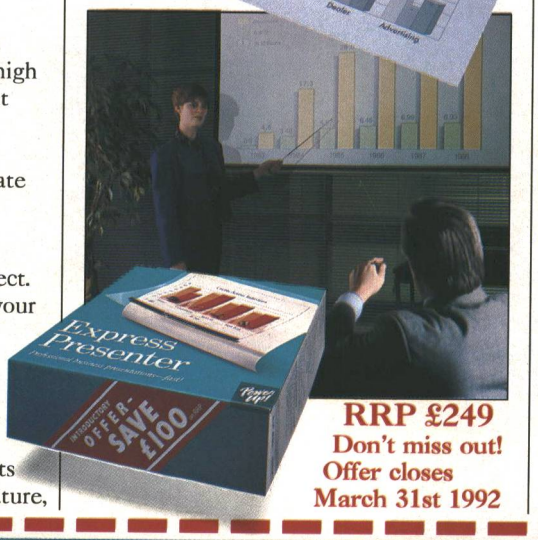
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### Landmark speed (1.14) 139Mhz

* 33Mhz main board - 64K CACHE * 1Mb onboard RAM expandable to 32Mb * Shadow RAM for system and Video BIOS * Real time clock calendar * User configurable I/O timing * EMS/LIM 4.0 support * Built in INTEL 80387 numeric coprocessor. On board NICAD battery * BIOS has full MS DOS, OS/2, XENIX, UNIX, NOVELL, 3 COM compatibility * 0 wait state operation * MS-DOS V5

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### Landmark speed (1.14) 26.7Mhz

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## ARRAN 386-33-64K Cache Features

### Landmark speed (1.14) 55.1Mhz

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## Olivetti PG308: Good for large quantities of mail

THIS powerful eight pages a minute printer is remarkably compact, having a rather squat appearance. Its box-like shape and uncluttered control panel give the impression of complete functionality.

Setting up is straightforward thanks to the detailed instructions and pictures included in the manual which is in the form of an A5 ring binder divided up into language sections.

Personally I find this type of multi-lingual manual a complete waste of resources. Surely it should be possible to produce it in the language for the country it is being shipped to.

The model supplied came complete with the optional Automatic Sheet Feeder (ASF). This unusual and rather complex device replaces the standard paper cassette and enables the user to have up to three different types of stationery. A typical arrangement for an office would be plain paper, letterheads and envelopes.

The ASF uses its own independent 12 volt power supply linked in parallel to the printer's mains supply. The printer has to be set up in ASF mode for the device to be able to work.



A compact interface enables the ASF to determine correctly which type of stationery is to be pulled through. This system is quite expensive, but in a busy office it would prove to be cost effective by being able to produce a letter complete with an addressed envelope and file copy.

The PG308 is quite capable of turning out well finished documents, within the limits of the built-in fonts. The two cartridge slots located beneath the paper tray can help to compensate for the limitations of the machine as supplied. The PostScript emulation cartridge can be added for £599, making it noticeably more expensive than some standard PostScript printers.

Output from the PG308 is good, though occasional striping was noticed on some graphics especially where there was a lot of shading.

This is a good choice of machine for offices that send out a large quantity of mail and do not require much in the way of fonts and graphics.

The ASF is an excellent add-on option that enhances the machine well for a reasonable cost. The overall price is a bit high, but many people will consider that the quality of support offered by a company like Olivetti is worth having.

## Rank Xerox 4010: A very solid performer

THE appearance of Xerox is very similar to that of the Seikosha and the Mannesman Tally. Fortunately, it possesses some major internal advantages which place it firmly in a higher performance category.

It was tested with Xerox's *Xscript 2.0* cartridge. This turns the printer into a full PostScript machine, mimicking the performance of Apple's Laser Writer range.

The cartridge slots neatly into a covered recess on top of the printer. Although there is only one font slot, it is certainly easier to access than those of the Hewlett-Packard.

The Xscript 2.0 cartridge will only work with Rank Xerox printers, despite the similarity of some of its competitors.

Having the PostScript technology on a cartridge offers two major benefits. Firstly, printers can be bought and upgraded at a later date, easing cash flow. Secondly, in instances where PostScript accuracy is unnecessary and speed of print is a primary requisite, the cartridge can be removed.

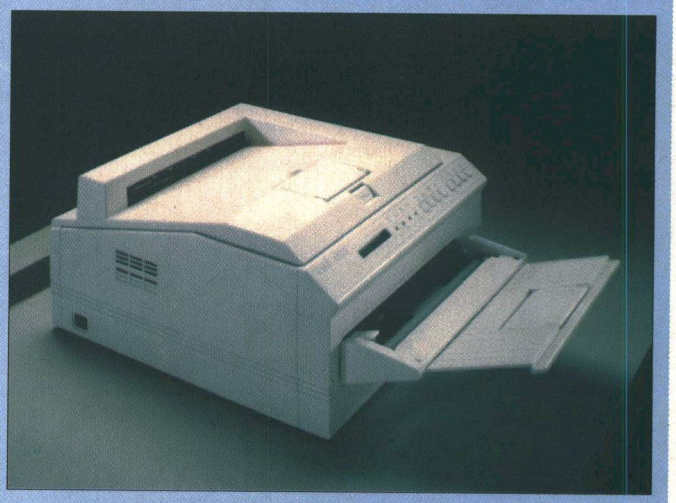
The Xerox will then work quickly in LaserJet II mode to print Courier or Lineprinter font copy.

The model tested was fitted with 2.5Mb of Ram – the bare minimum for Xscript printing. Extra memory can be added at £195 for another 2Mb.

In PostScript mode, the Xerox was fast and produced quality copy. It claims an Xscript speed of four pages a minute.

Using Windows 3.0, the fonts produced were especially good in the lower sizes, but lines and curves suffered from a more jagged appearance in 36 point and above.

The results were still better than those you can expect to receive from an outline font system such as Adobe Type Manager. Our major quibble with the Xerox is its paper feed tray. Like the Seikosha, it is open to the atmosphere and all the problems associated with it.



Dust and damp will be major contributory factors in reducing the working life of your Xerox. Aside from actually making filling simpler, this type of tray seems to add nothing to the printer.

As a complete PostScript package the Xerox 4010 is a solid performer. This comes as no surprise for a company who have built their reputation around top-notch hardcopy devices.

# Before choosing a it's essential to make

If you're thinking of investing between £1200 and £3000 in a notebook, may we suggest you ask yourself some important questions. And wouldn't it be worth knowing whether there's someone who specialises in notebooks and nothing else.

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VORTEC 2040 AX
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*Will the machines have the power to satisfy all my computing requirements?*

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# notebook computer a few notes.

## Will I find it easy to use?

Vortec notebooks are specifically designed to be both practical and versatile. For your convenience, every Vortec notebook is supplied with relevant software already installed and configured e.g. Windows 3 or Lotus Works and DOS.

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Personal Computer World says, "The Vortec 1620 has an excellent keyboard...."

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The idea is to get your machine working again there and then - should the problem turn out to be major, our engineer will endeavour to transfer all your hard disk data - or the hard disk itself - to an identical replacement machine.




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VORTEC SX EXECUTIVE
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## Conclusion: Which should you buy?

**ALL the printers were creditable in their consistency -undoubtedly a valuable point to bear in mind when choosing a machine.**

**In the test we looked at several models that shared similar engines and casings. However, the specification and performance of these printers were not always the same.**

**We also looked at some of the emerging technology that's likely to affect home and office printing in the next few years. We tested two LED printers and found that while there were some drawbacks they were generally lighter and more portable and an interesting innovation.**

**The overall winner, though not by much, was the Hewlett-Packard LaserJet III. The sheer power of the machine, combined with excellent performance and design made it the best buy of our review.**

**The resolution enhancement technology employed by Hewlett-Packard certainly made a difference to the quality of the print while the design of the machine made it a robust contender for any office.**

**The Brother HL-8PS PostScript printer came close to the Hewlett Packard in terms of performance and can be seen as a competitive purchase in its own right. Also deserving a mention is the Oki OL-830 must be seen as a brave attempt as it offers PostScript quality printing at an exceedingly competitive price.**

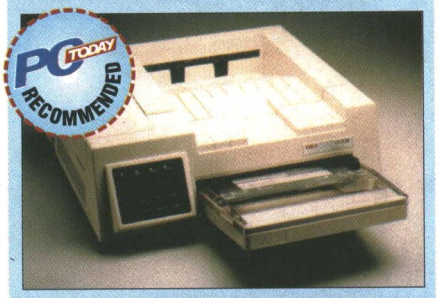
**Of the smaller printers the Mannesmann Tally was clearly a well specified machine at a very good price while the Samsung proved itself a worthy heavy duty printer.**

**While costs of laser printers may vary the cost of consumables and upgrades tended to cancel each other out. The final analysis of the nine laser printers on test must be that there is undoubted quality in the market and price distinctions are quickly being eroded.**
















## What it costs to run a laser printer

ONE of the often overlooked aspects of laser printing are the costs of consumables. The falling price of hardware hasn't been mirrored in the price of toner, drum and developer kits.

To measure accurately the running costs of laser printers we took the manufacturers' prices for toner and developer and divided by the number of pages claimed for each.

This gave an approximate cost per page, but several factors have to be borne in mind.

Manufacturers' page count claims for toner life are usually based on an average page print density of five per cent. For anyone using a printer for desktop publishing or graphics, such claims are patently false so the cost per page is a great deal higher.

Printers vary quite a lot in terms of the type of consumables they use. Several on test had combined toner and drum kits that need to be changed after a certain number of pages.

Others had separate kits where the drum life is considerably longer than the toner and subsequently, page costs can be lower depending on the application used.

Samples of the separate consumables include the Seikosha which cost approximately 1.45 pence a page while the Hewlett-Packard with a single removable toner and drum unit worked out at 2.07 pence.

Of course, using these machines for graphics and DTP will strain the memory and our survey found large differences in the price of upgrading.

Prices for 1Mb ranged from £100 to £175, but purchasing 2 or 3Mb together reduced the cost considerably.

There are a lot of swings and roundabouts in the cost of consumables. While separate toner and drum may prove cheaper you'll probably find that upgrading memory is more expensive. Shopping around is strongly recommended.

| Model | Supplier | Telephone | Price | Memory Min/Max | PPM | Slots | Cost per page | Warranty | Resident Fonts | Emulations | Cassette cap |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MT 904 Plus | Mannesmann Tally | 0734 788711 | £1,099 | 1/3Mb | 4 | 1 | 1.70p | 1year on-site | 14 bitmap | 3 | 100 sheet |
| OP-104 | Seikosha | 0753 685873 | £940 | 0.5/3Mb | 4 | 1 | 1.4500p | 1year on-site | 14 Bitmap | 1 | 100 sheet |
| LaserJet III | Hewlett-Packard | 0344 360000 | £1,749 | 1/5Mb | 8 | 2 | 2.07 | 1 year | 8 Scalable | 1 | 250 sheet |
| SL-1081A | Samsung | 081-391 0168 | £891 | 0.5/4.5Mb | 8 | 2 | 1.83p | 1 year | 24 Bitmap | | 200 sheet |
| OL830 | Oki | 0800 525585 | £1,499 | 2/4Mb | 8 | 2 | 2.21 | 1 year | 7 scalable Adobe fonts | 1 | 200 sheet |
| Xerox 4010 | Rank Xerox | 0895 251133 | £1,769 | 2.5/4.5Mb | 4 | 1 | 1.62 | 1 year | 35 resident contour | 2 | 100 sheet |
| HL-8PS | Brother | 061-330 6531 | £1747 | 2/6Mb | 8 | 2 | | 1 year on-site | 35 scalable | 3 | 200 sheet |
| OL400 | Oki | 0800 525585 | £899 | 0.5/2.5Mb | 4 | | | 1 year on-site | 25 Bitmap | 3 | 200 sheet |
| PG308 | Olivetti | 0908 690790 | £1,399 | 0.5/4Mb | 4 | 2 | | 1 year on-site | 24 Bitmap | 1 | 200 sheet |

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|---|---|---|---|---|---|---|---|---|---|
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| 286 12MHz | £532 | £562 | £695 | £719 | £729 | £752 | £CALL | £CALL | £CALL |
| 286 16MHz | £542 | £572 | £705 | £729 | £739 | £762 | £CALL | £CALL | £CALL |
| 386SX 20MHz | £665 | £695 | £828 | £852 | £862 | £885 | £CALL | £CALL | £CALL |
| 386SX 25MHz | £685 | £715 | £848 | £872 | £882 | £905 | £CALL | £CALL | £CALL |
| 386 25MHz | £724 | £754 | £887 | £911 | £921 | £944 | £CALL | £CALL | £CALL |
| 386 33MHz+CACHE | £812 | £842 | £975 | £999 | £1009 | £1032 | £CALL | £CALL | £CALL |
| 486 25MHz+CACHE | £970 | £1000 | £1133 | £1157 | £1167 | £1190 | £CALL | £CALL | £CALL |
| 486 33MHz+CACHE | £1087 | £1117 | £1250 | £1274 | £1284 | £1307 | £CALL | £CALL | £CALL |

These are actual CPU speeds not landmark speeds

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| Mini Tower Option | +£10 |
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| Mouse with Software, Mat and 'House' | +£26 |

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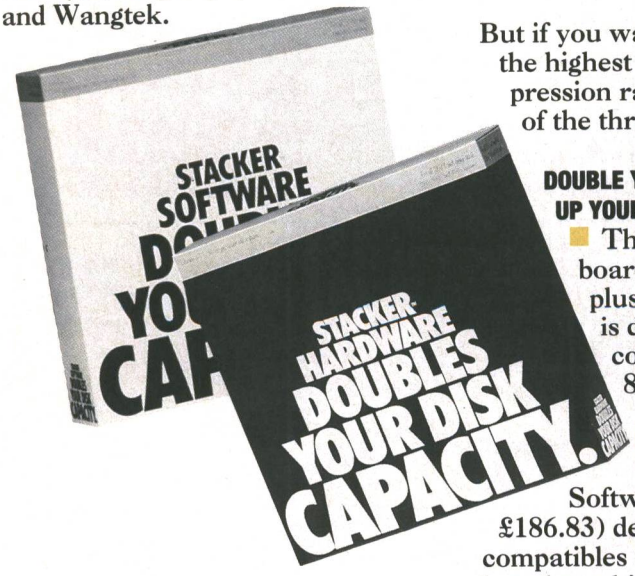
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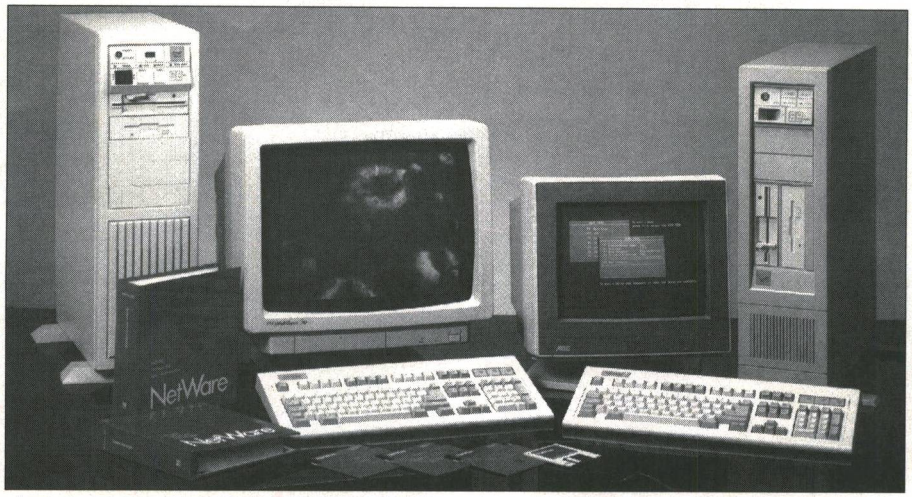
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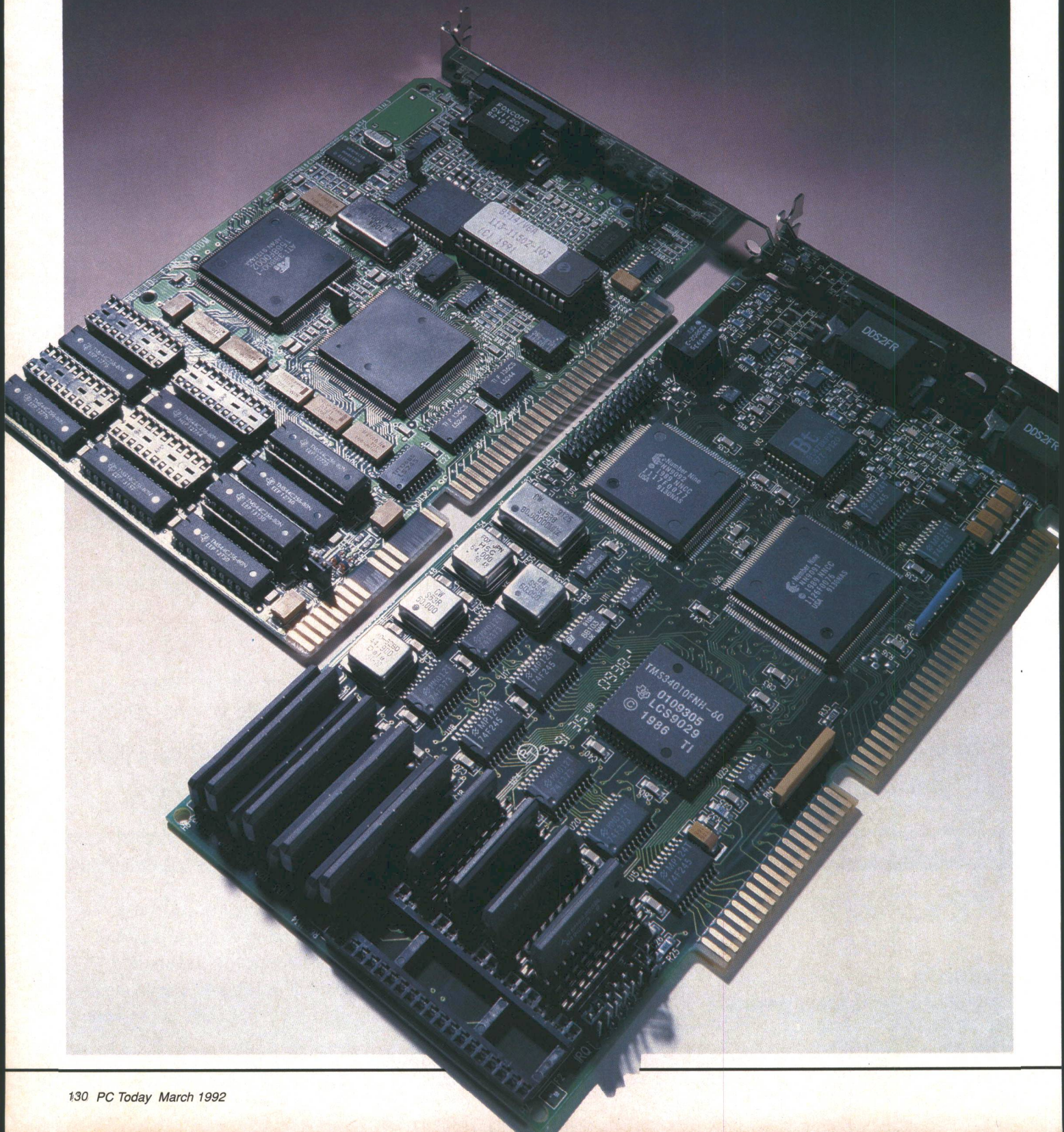
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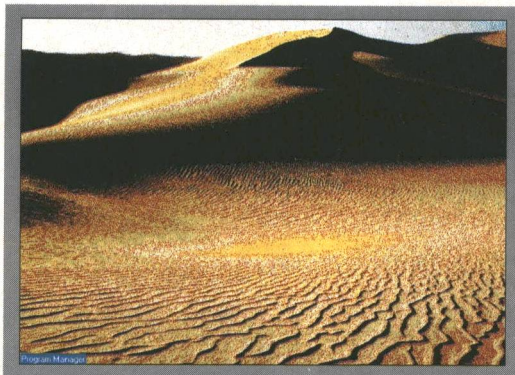
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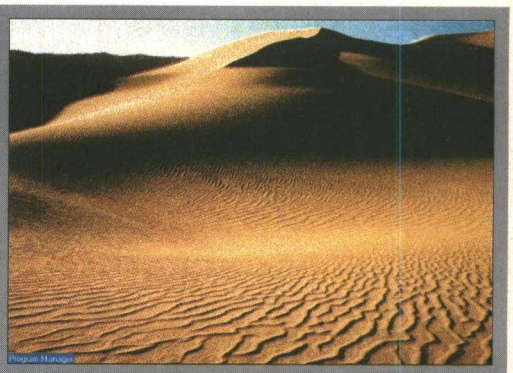
# GRAPHICAL DETAILS

**The sheer number of graphics cards available today is nothing short of bewildering. James Tye surveys the marketplace**





❑ When 256 bitmaps are displayed in a 16 colour mode, Windows will try to find colour matches



❑ The same bitmap in all its 256 colour glory. The scene now actually resembles sand dunes

TEN years ago, in the dusty annals of PC history, the infant IBM PC was launched and it came supplied with a monochrome display. At the time IBM had decided that the PC didn't need graphics as business users only manipulated text and figures. Looking at the plethora of graphics cards and monitors now available, it's obvious times have changed.

PC applications, especially graphical user interfaces like Windows, paint, drawing, CAD and DTP programs, and multimedia, often require high resolution video cards to display photographic quality images. The basic requirement for this effect is a 256 colour palette and a minimum screen resolution of 640 x 480 pixels.

However, an increasing number of cards are offering 32,768-colour modes and up to 1,024 x 768 pixels for displaying photo-realistic images.

Although this type of hardware sounds advanced, it needn't be expensive. The difference between the cost of standard VGA and Super VGA is often very small, and some manufacturers supply it as standard.

The video graphics array (VGA) was a graphical breakthrough for the PC. Only a couple of years later it is definitely showing its age.

This, combined with the proliferation of the applications mentioned above, led to the birth of Super VGA, the first non-IBM approved graphics adaptor.

Although standard VGA offers 256 colours, it uses a comparatively low resolution of 320 x 200 pixels. Windows usually works in a resolution of 640 by 480 pixels, but at this resolution VGA can manage only 16 colours on the screen.

To make 256 colours available, or to work in a higher resolution altogether, more memory is needed by the graphics card. Finding 512k or 1Mb of ram on a modern Super VGA (SVGA) card is not uncommon.

With an SVGA card installed, software will need to use a special driver (small program) supplied by the graphics card manufacturer to produce the extra screen modes. Depending on the specification of the card, resolutions of 800 x 600 and 1,024 x 768 are available in either 16 or 256 colours.

What do all these numbers mean to the user? If you're using a SVGA with Windows 3.0, then you'll be able to view 256 colour images at a resolution of 640 x 480 or greater, giving near photographic quality.

The latest graphics cards are offering 32,768 colour modes which will produce visually stunning pictures. Although software support is limited mostly to CAD applications, Windows 3.0 drivers should also allow users to take advantage of this quality.

Windows 3.0 is undoubtedly a popular graphics platform. One of the salient advantages of Windows is its flexibility concerning driver software – any package running in the Windows environment will use the chosen graphics driver, regardless of its origin.

The driver software supplied with video cards is generally quite up to date. However, an application update can instantly make these obsolete. Windows 3.1 is a classic example. With my beta of version 3.1, Windows 3.0 graphics drivers invariably crashed, if they worked at all.

If you intend to upgrade to 3.1 you won't immediately be able to use your graphics card beyond standard VGA modes. It's important that graphics card manufacturers support the latest version of applications so expect to see new releases of drivers very soon.

## Bench test

ALTHOUGH there is an enormous selection of SVGA graphics cards available, they often use the same chip set. There are a several well known video chip manufacturers that crop up time and time again – ATI, Texas Instruments and Tseng to name but a few.

The speed of the graphics bios is one criterion that is becoming increasingly significant. To this end, several manufacturers produce graphics coprocessors which can improve screen drawing rates, especially under Windows 3.0. The major players are jumping on this bandwagon, and Weitek's 5086 chip (reviewed in February's ***PC Today***), is dedicated to reducing the graphics bottleneck in Windows 3.0.

I looked at a selection of graphics cards which aim to provide superior capabilities to VGA and found some to be very impressive indeed. All the tests were carried out on a Dan 486-33 with SVGA interlaced monitor.

## ATI 8514 Ultra

THE ATI 8514 Ultra is not a stand alone unit, and is designed to be used in conjunction with another SVGA card. For the purpose of this test it was connected to the ATI VGA Wonder card. Installation involves pushing the 8514 into a slot neighbouring the installed VGA card and then connecting the two with the supplied cable.

This marriage has the beneficial result of combining the strengths of both cards to produce exceptional performance. Users who already have an SVGA card will be able to upgrade without having to purchase yet another graphics card.

The main advantage of the Ultra is its coprocessing abilities. ATI claim that it is up to 65 times faster than other VGA cards. However, in normal use this sort of speed improvement is highly unlikely for various reasons.

The most impressive feature of the Ultra are its Crystal Fonts. In high resolution modes – especially 1,024 x 768 – Windows system fonts are replaced by ATI's own font technology. This uses anit-aliasing to eliminate jagged lines and improve readability. The results are impressive.

One of the major drawbacks of using Windows in a higher resolution is the small size of the fonts. These cause eye strain and limit the use of wysiwyg. Crystal Font technology knocks both these problems on the head. Drivers are included for Windows 3.0 and Autocad 10/11.

The 8514 Ultra is the strongest argument I've seen for switching to using Windows in a 1,024 x 768 pixel mode. Even on an interlaced monitor, there is no noticeable flicker and the Crystal Fonts clarified all on-screen text. The screen update rate is also significantly improved. After using it for the evaluation period, I was reluctant to let it go.

## MegaVGA 1024

THE MegaVGA 1024 is no more than a top end VGA card. Incorporating the Tseng ET4000 chip it, offers a larger colour palette than most SVGA cards as it's capable of displaying 32,768 colours at a resolution of 640 x 480.

The MegaVGA was easy to configure as is was supplied with a comprehensive range of drivers. Although it rendered the colours well in Windows 3.0, it just didn't have the speed of the boards

➤

with coprocessors. The lower price of the MegaVGA reflects this.

The demo software supplied shows off the colour palette extremely well. Unfortunately this is about all the software available that supports 32,768 colour modes, making the board more of an investment for the future.

## Taxan GTS595

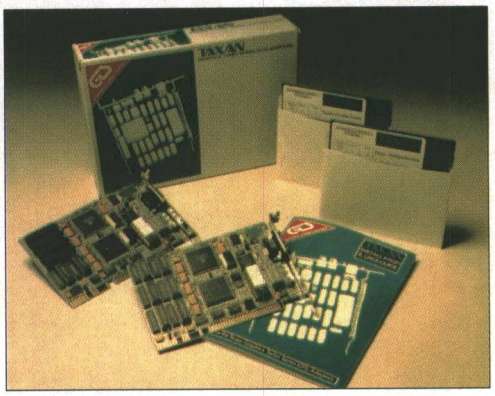
AS the Taxan uses some of the same chips as the 8514 Ultra, it comes as no surprise that its performance is almost identical. Even the installation screens bear more than a passing resemblance.

One of a series of four *Graphics Turbo Series* adaptors, the GTS595 is a graphics coprocessor and SVGA card in one. The combination is less flexible than the Ultra, but will take up only one expansion slot in your system.

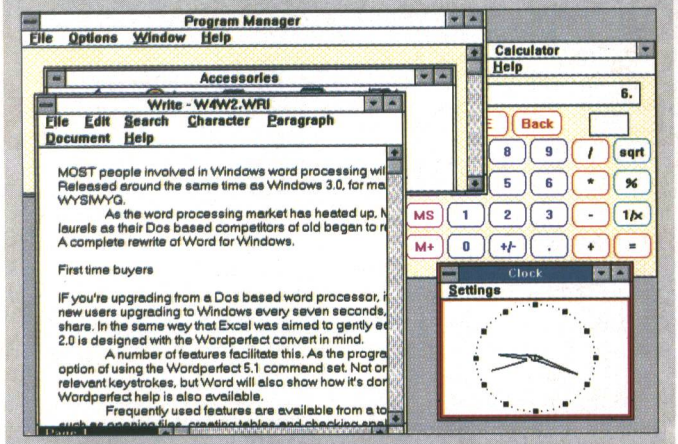
The card is also physically much smaller, which may be useful where internal space is exceptionally limited.

The SVGA card has 512k of memory on board and supports 256 colours at 1,024 x 768 resolution. The Crystal Font system supplied with the Taxan is every bit as good as the Ultra's. However, due to its limited on-board ram, when using Crystal Fonts at their highest resolution, only 16 colours are available.

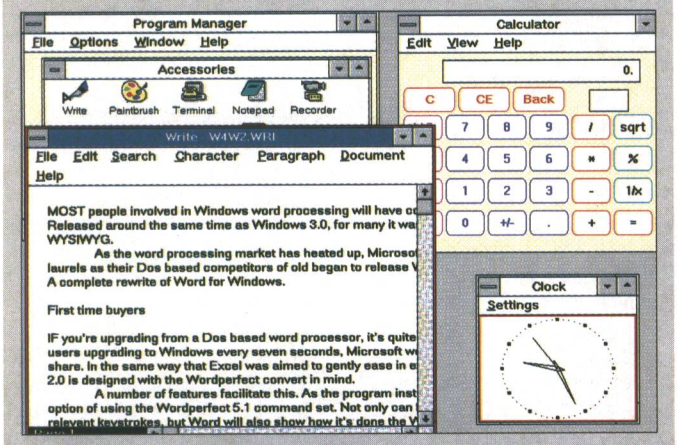
Despite the limitations of the Taxan, it still represents good value for money to users wishing to upgrade to a fast SVGA.



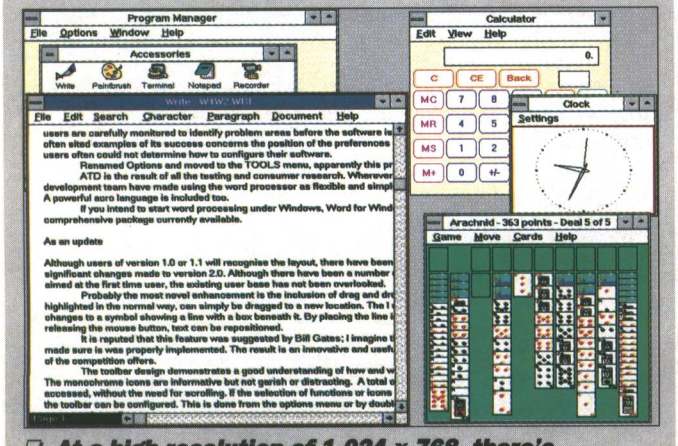
## Enhancing your view




❑ *At a resolution of 640 x 480, the Windows display can quickly become cluttered*




❑ *Stepping up to 800 x 600 provides much more room without sacrificing clarity*




❑ *At a high resolution of 1,024 x 768, there's even space to open a few new windows*

## Number Nine GX Lite

THE only board on test that included the new Texas Instruments TMS 34020 graphics coprocessor was the GX Lite.

The board also contains an SVGA card capable of displaying 256 colours in 1,024 x 768 mode.

The board worked efficiently in all its test modes, but wasn't as clear in high resolution modes as the Taxan or 8514 Ultra – it doesn't provide Crystal Font technology.

Although the card works as a stand alone unit, it can be coupled with another SVGA card to enhance its capabilities. This offers an upgrade route for the user as new, more powerful graphics cards are released on to the market.

Speed improvements were certainly noticeable, but my overall impression was that they were not quite as significant as the Ultra's. As an all-in-one upgrade, the GX Lite is competitively priced.

## Interlacing

ANY super VGA monitor will support high resolutions, but some displays flicker more than others. This is often due to a process called interlacing.

To allow cards and monitors to achieve higher resolutions than they would normally be able to produce, only alternate lines of the image are drawn on the screen. This means that to display a complete picture, first all the even numbered lines are drawn and then the odd ones are filled in (or vice versa).

This has the effect of reducing the refresh rate of the display. The human eye can detect this slow down and consequently the picture will appear to flicker.

Non-interlaced displays have very fast electronic circuits that are able to build the picture first time round, producing a rock-solid display which is easier on the eyes. To take advantage of this system both your monitor and graphics card will have to support it.

| | Colours at 640 x 480 | Colours at 1024 x 768 | Non-interlace support | Graphics coprocessor | Crystal Fonts |
|---|---|---|---|---|---|
| ATI 8514 Ultra | * | * | yes | yes | yes |
| MegaVGA 1024 | 32,768 | 256 | yes | no | no |
| Taxan GTS595 | 256 | 16 | yes | yes | yes |
| Number Nine GX Lite | 256 | 256 | yes | yes | no |

❑ *Comparison chart of the features of the video cards on test. *Depends on the SVGA card it is connected to*

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## Choosing an upgrade path

BEFORE making the decision to upgrade your graphics card, first check the specifications for your existing one. This will usually be detailed in the documentation that accompanies your PC.

Another important consideration is the monitor your system uses. Not all monitors support high resolution SVGA modes, particularly 800 x 600 and 1,024 x 768. If you're upgrading from CGA or EGA it is very unlikely that your existing monitor will work and you will also need to change it, adding considerably to the cost.

The operating system you use also has some bearing on the decision. To make the most of SVGA, your software will have to be graphical, like Windows. Although many cards include support for common Dos-based packages such as 1-2-3 and WordPerfect, you will not be able to run the majority of Dos programs in high resolution.

As the driver software supplied will vary from card to card, it's important to determine whether your favourite packages are supported.

With the graphics coprocessors, users will only benefit from significant speed increases when working under Windows 3.0.

## CHECKLIST

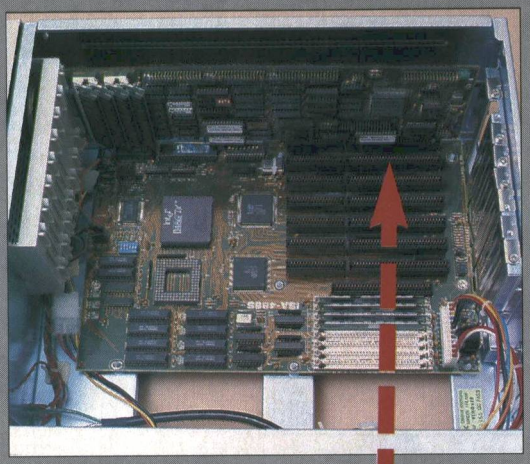
Product: ATI 8514 Ultra
Price: £489
Supplier: Open Communication Systems Ltd, Unit 6, Greystones, Bromham, Wilts, SN15 2JT
Tel: 0380 850021

Product: MegaVGA 1024
Price: £149
Supplier: D.S. Computer supplies, Unit 206, Belgravia Workshops, 157-181 Marlborough Road, London N19 4NP
Tel: 071-281 7364

Product: Taxan GTS595
Price: £399
Supplier: Taxan, Taxan House, Cookham Road, Bracknell, Berkshire RG12 1RB
Tel: 0344 860981

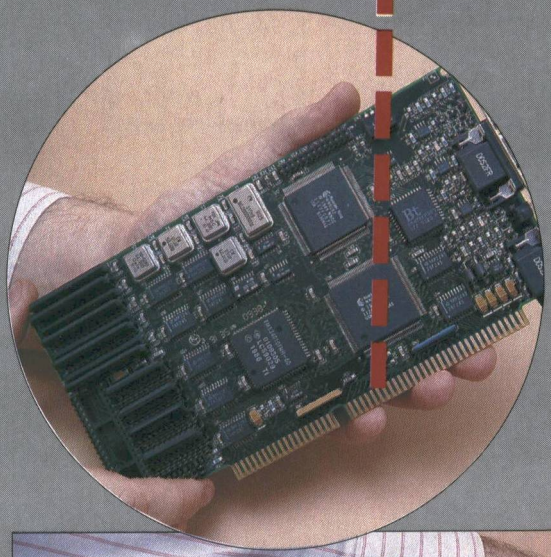
Product: Number Nine GX Lite
Price: £575
Supplier: MCS, Stopsley Business Centre, St Thomas's Rd, Luton LU2 7UX
Tel: 0582 483381

## Installing a Super VGA card



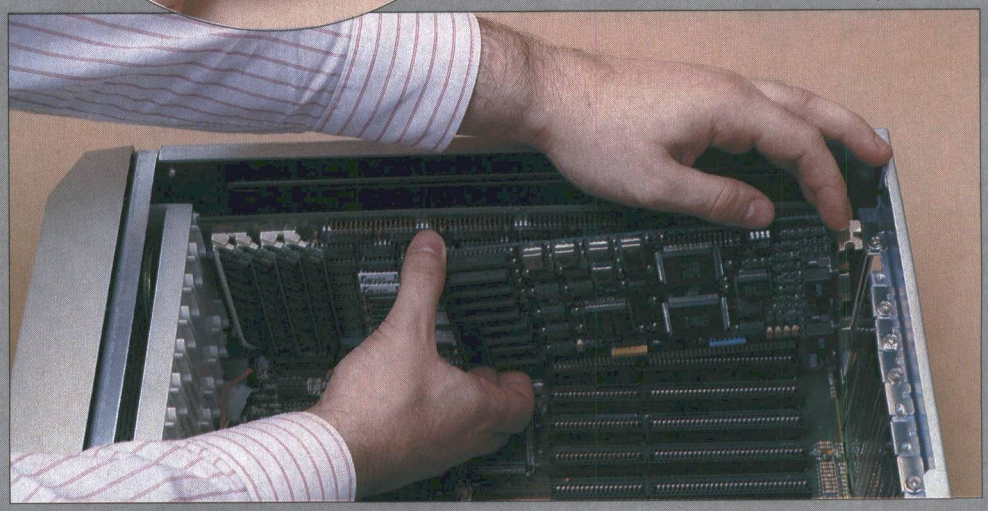
### 1. Finding a slot

Turn off the power to your PC and remove the case. The screws are usually situated on the back and the manufacturer's manual will detail these if you're not sure which ones to remove. Depending on your PC, there will be a number of expansion slots visible inside. Some of these will be the short 8-bit slots and others will be longer 16-bit ones. For clarity, the hard disk controller and cables have been moved in the photograph.



### 2. Handle with care

Ground yourself on either the computer structure or a nearby radiator. Remove the graphics card from its protective packing. Always hold the board by the edges, making sure it is never supported by its chip sets. Although these boards are fairly robust, it is wise to treat them as delicately as possible.



### 3. Install the card

Find a spare 16-bit slot on your motherboard. If you have previously removed a graphics card, try to use the same slot. Holding the card as in the photograph, line the gold edge connectors with the chosen slot. Pushing gently, ease the card into the slot until the metal slot cover is flush with the screw hole.

If the card doesn't seem to fit, rocking it back and forth can help slide it in. If after using gentle force the card still doesn't seem to fit, put the graphics card back in its packaging and consult your PC's manufacturer.

If installation is successful reassemble the system unit. The first check your PC performs on power up will display the nature of your graphics card bios. If the message is pertinent to the new graphics card, then the card is fully installed.

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| D/PRO 386/33L | 2Mb ....£99 | (E) |
| D/PRO 386/33L | 8Mb ....£399 | (E) |
| D/PRO 386/33L | 32Mb ....£2300 | (M) |
| D/PRO 486/25; 486/33L | 2Mb ....£99 | (E) |
| D/PRO 486/25; 486/33L | 8Mb ....£399 | (E) |
| D/PRO 486/25; 486/33L | 32Mb ....£2300 | (M) |
| D/PRO 486/50L; SYSTEMPRO | 2Mb ....£99 | (E) |
| D/PRO 486/50L; SYSTEMPRO | 8Mb ....£399 | (E) |
| D/PRO 486/50L; SYSTEMPRO | 32Mb ....£2300 | (E) |
| D/PRO 486/33M; 486s/25M & 486s/16M | 1Mb ....£48 | (M) |
| D/PRO 486/33M; 486s/25M & 486s/16M | 2Mb ....£80 | (M) |
| D/PRO 486/33M; 486s/25M | 4Mb ....£135 | (M) |
| D/PRO 486/33M; 486s/25M & 486s/16M | 8Mb ....£299 | (M) |
| D/PRO 386N; 386s/20 & 386/25M | 1Mb ....£48 | (M) |
| D/PRO 386N; 386s/20 & 386/25M | 2Mb ....£80 | (M) |
| D/PRO 386N; 386s/20 & 386/25M | 4Mb ....£135 | (M) |
| D/PRO 386/25M | 8Mb ....£299 | (M) |
| D/PRO 386S | 1Mb ....£70 | (E) |
| D/PRO 386S | 4Mb ....£195 | (E) |
| D/PRO 386S EXP BOARD WITH | 1Mb ....£120 | (E) |
| D/PRO 386S EXP BOARD WITH | 4Mb ....£235 | (E) |
| D/PRO 386/20; 386/25 D/PRO 386/20E & 386/25E | 1Mb ....£75 | (E) |
| D/PRO 386/20; 386/25 D/PRO 386/20E & 386/25E | 4Mb ....£185 | (E) |
| D/PRO 386/20E & 25E EXP BOARD WITH | 1Mb ....£120 | (E) |
| D/PRO 386/20E & 25E EXP BOARD WITH | 4Mb ....£239 | (E) |

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|---|---|---|
| 325P; 325D; 333D AND 486/33 | 1Mb ....£48 | (M) |
| 325P; 325D; 333D AND 486/33 | 2Mb ....£80 | (M) |
| 325P; 325D; 333D AND 486/33 | 4Mb ....£140 | (M) |
| 425T; 433T;425STE AND 433TE | 2Mb ....£80 | (M) |
| 425T; 433T; 425TE AND 433TE | 4Mb ....£140 | (M) |
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| 425T; 433T; 425TE AND 433TE | 16Mb ....£560 | (M) |

### SIMMS & SIPPS

Industry standard DRAM modules. SIMMS & SIPPS are commonly used for motherboard upgrades and IBM compatible expansion products.

| | | | |
|---|---|---|---|
| 256K x 9 100 | £10 | 4Mb x 9 70 | £120 |
| 256K x 9 80 | £12 | 256K x 36 | £39 |
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| 4Mb x 9 80 | £120 | | |

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| 110LX;1100/33 & 1120SX | 2Mb ....£60 | (M) |
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| 1200 & 1170 | 2Mb ....£80 | (M) |
| 1200 & 1170 | 4Mb ....£140 | (M) |
| 1200 & 1170 | 8Mb ....£280 | (M) |

### OLIVETTI MEMORY

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| PCS 86 | 2Mb ....£60 |
| PCS286 | 2Mb ....£60 |
| PCS386SX | 2Mb ....£60 |
| M290S | 2Mb ....£60 |
| M300 | 2Mb ....£60 |
| M380/XPI & XP/9 | 2Mb ....£60 |
| PC/Pro SX/20 | 4Mb ....£120 |
| PC/Pro SX/20 | 16Mb ....£480 |
| M386/25 | 2Mb ....£60 |
| M386/25 | 4Mb ....£120 |
| M386/25 | 8Mb ....£240 |
| M486/CP 486 | 2Mb ....£80 |
| M486/CP 486 | 4Mb ....£140 |

Please call for upgrades on Olivetti PC 500 & PC800

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|---|---|---|
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| PS/2 25/286 G36; G06; 036; 006 | 2Mb....£90 | (B) |
| PS/2 57SX | 2Mb....£110 | (B) |
| PS/2 57SX | 4Mb....£190 | (E) |
| PS/2 57SX | 8Mb....£399 | (E) |
| PS/2 40SX | 2Mb....£85 | (M) |
| PS/2 40SX | 4Mb....£140 | (M) |
| PS/2 40 SX | 8Mb....£299 | (M) |
| PS/2 35SX & LS | 2Mb....£85 | (M) |
| PS/2 35SX & LS | 4Mb....£140 | (M) |
| PS/2 35SX & LS | 8Mb....£280 | (M) |
| PS/2 55LS | 1Mb....£48 | (M) |
| PS/2 55LS | 2Mb....£80 | (M) |
| PS/2 55LS | 4Mb....£140 | (M) |
| PS/2 65SX | 1Mb....£48 | (M) |
| PS/2 65SX | 2Mb....£80 | (M) |
| PS/2 65SX | 4Mb....£140 | (M) |
| PS/2 55SX | 1Mb....£48 | (M) |
| PS/2 55SX | 2Mb....£80 | (M) |
| PS/2 55SX | 4Mb....£140 | (M) |
| PS/2 65LS | 2Mb....£80 | (M) |
| PS/2 65LS | 4Mb....£140 | (M) |
| PS/2 50Z & 55Z | 2Mb....£80 | (M) |
| PS/2 70-161; 121; 081; 061 & E-61 | 1Mb....£48 | (M) |
| PS/2 70-161; 121; 081; 061 & E-61 | 2Mb....£80 | (M) |
| PS/2 70-161; 121; 081 | 4Mb....£140 | (M) |
| PS/2 70-A81; A61; A21; A16; B61 & B21 | 2Mb....£85 | (M) |
| PS/2 80-041 | 1Mb....£80 | (E) |
| PS/2 80-111; 311-121; 321; 081 & 161 | 2Mb....£99 | (E) |
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|---|---|---|
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| PS/2 90 & 95 | 8Mb....£399 | (E) |
| RISC Sys 6000 | 16Mb....£call | (E) |
| RISC Sys 6000 | 32Mb....£call | (E) |
| RISC Sys 6000 | 64Mb....£call | (E) |

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| 2-8Mb memory exp board | W/8Mb ...£460 |
| 2-16Mb memory exp board | W/2Mb ...£220 |
| 4-16Mb memory exp board | W/4Mb ...£300 |
| 2-8Mb memory exp board for models 55LS; 65SX; 50; 60; 50Z & 55SX | W/2Mb ...£199 |
| 2-8Mb memory exp board for models 55LS; 65SX; 50; 60; 50Z & 55SX | W/4Mb ...£280 |
| 2-8Mb memory exp board for models 55LS; 65SX; 50; 60; 50Z & 55SX | W/6Mb ...£360 |
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| 16 Bit/LCS-8661N | AT | with | 2Mb | £160 |
| 16 Bit/LCS-8661N | AT | with | 4Mb | £220 |
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| **BOCARAM** | | | | |
| 32MCA | MCA | with | 2Mb | £180 |
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| **AST RAMPAGE PLUS 286 EXPANSION BOARD** | | | | |
| **AST** | | | | |
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| 8/16ISA | XT/AT | with | 8Mb | £380 |

All memory expansion boards come with manufacturers warranty and software drives and manual and are fully compatible with all slots.

### ZENITH MEMORY

| | | |
|---|---|---|
| Z 386SX; 286-LP+; X-LS | 2Mb....£70 | (M) |
| Z386/20; 25; 33; 33E | 1Mb....£48 | (M) |
| Z386/20; 25; 33 | 2Mb....£80 | (M) |
| Z386/20; 25; 33; 33E & 486/25E | 4Mb....£140 | (M) |
| Zenith 486/33 ET | 4Mb....£140 | (M) |
| Zenith 486/33 ET | 16Mb...£560 | (M) |

If you don't see the Zenith upgrade you require please call. Memoryworld supports the entire range of Zenith memory

### ELONEX MEMORY

| | | |
|---|---|---|
| PC 286M | 2Mb ....£60 | (M) |
| PC 286M | 4Mb ....£120 | (M) |
| PC 386; B/33 | 2Mb ....£96 | (M) |
| PC 386; B/33 | 4Mb ....£140 | (M) |
| PC 386; B/33 | 8Mb ....£280 | (M) |
| PC 386; B/33 | 16Mb ....£560 | (M) |
| PC/386; B/25 | 4Mb ....£140 | (M) |
| PC/386; B/25 | 16Mb ....£560 | (M) |
| PC 386SXM & SXB | 2Mb ....£60 | (M) |
| PC 386SXM & SXB | 4Mb ....£120 | (M) |
| PC 386SXM & SXB | 8Mb ....£240 | (M) |
| PC 386, V/E | 2Mb ....£60 | (M) |
| PC 386, V/E | 4Mb ....£120 | (M) |
| PC 386, V/E | 8Mb ....£240 | (M) |
| PC 386, V/E | 16Mb ....£480 | (M) |
| PC 386, V/E | 32Mb ....£960 | (M) |
| PC 486, V/E | 8Mb ....£240 | (M) |
| PC 486, V/E | 16Mb ....£480 | (M) |
| PC 486, V/E | 32Mb ....£960 | (M) |

Please call for models PC 433/450; PC 333; PC 320SX and PC 420SX/425SX

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|---|---|---|
| Genie 286 & 386SX | 2Mb ....£60 | (M) |
| Genie 286 & 386SX | 4Mb ....£120 | (M) |
| Elite; SX; SX/20 & SL | 2Mb ....£60 | (M) |
| Elite; SX;SX/20 & SL | 4Mb ....£120 | (M) |
| Vig III LS | 2Mb ....£60 | (M) |
| Vig III LS | 4Mb ....£120 | (M) |
| Vig III LS | 8Mb ....£240 | (M) |
| Vig IV | 2Mb ....£60 | (M) |
| Vig IV | 4Mb ....£120 | (M) |
| Vig IV | 8Mb ....£240 | (M) |
| Vig III/25 & Vig III/33 | 4Mb ....£120 | (M) |

### ICL MEMORY

| | | |
|---|---|---|
| DRS model 30 | 512Kb....£18 | (M) |
| DRS model 30 | 2Mb ....£58 | (M) |
| DRS model 40 & 45 | 2Mb ....£50 | (M) |
| DRS model 50 & 55 | 1Mb ....£28 | (M) |
| DRS model 50 & 55 | 4Mb ....£120 | (M) |
| DRS model 75 | 4Mb ....£140 | (M) |
| DRS model 75 | 8Mb ....£240 | (M) |
| DRS model 75 | 16Mb ....£480 | (M) |
| DRS model 95 | 4Mb ....£135 | (M) |
| DRS model 95 | 8Mb ....£240 | (M) |
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| PC2386 | 4M-16Mb ....£480 | (M) |
| PC1386/2 | 1Mb-4Mb ....£120 | (M) |
| PC3286 & 3386 | 1MB-2Mb ....£60 | (M) |
| PC3286 & 3386 | 1Mb-4Mb ....£120 | (M) |
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|---|---|---|---|
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| N/A | Deskjet 500 Plus | 256KB | £69 (T) |
| H33474B | IIP; II; IIIP & IID | 1Mb | £69 (T) |
| H33475B | IIP; II; IIIP & IID | 2Mb | £99 (T) |
| H33476B | IIP; II; IIIP & IID | 3Mb | £139 (T) |
| H33477B | IIP; II; IIIP & IID | 4Mb | £179 (T) |
| H33443B | II & IID | 1Mb | £69 (T) |
| H33444B | II & IID | 2Mb | £99 (T) |
| H33445B | II & IID | 3Mb | £139 (T) |
| H33445B | II & IID | 4Mb | £179 (T) |
| C2063A | IIISi | 1Mb | £48 (M) |
| C2065A | IIISi | 4Mb | £149 (M) |
| **IBM** | | | |
| 1039136 | 4019 & 4019E | 1Mb | £75 (T) |
| 1039137 | 4019 & 4019E | 2Mb | £110 (T) |
| 1038675 | 4019 & 4019E | 3.5Mb | £169 (T) |
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| KX-P443 | KX-P4420 & 4450i | 1Mb | £75 (T) |
| KX-P441 | KX-P4420 & 4450i | 2Mb | £110 (T) |
| N/A | KX-P4420 & 4450i | 3Mb | £149 (T) |
| N/A | KX-P4420 & 4450i | 4Mb | £179 (T) |
| **OKI** | | | |
| N/A | Laser 400 | 1Mb | £75 (T) |
| N/A | Laser 400 | 2Mb | £110 (T) |
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| 70015202 | Laser 800 & 820 | 2Mb | £139 (T) |
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| S63-1300 | LBP8/11 & LBP4 | 1Mb | £75 (T) |
| S63-1800 | LBP8/11 & LBP4 | 2Mb | £110 (T) |
| N/A | LBP8/11 & LBP4 | 4Mb | £179 (T) |
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| ST100 | LS04/LS08 | 1Mb | £129 (T) |
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| ST400 | LS04/LS08 | 4Mb | £259 (T) |

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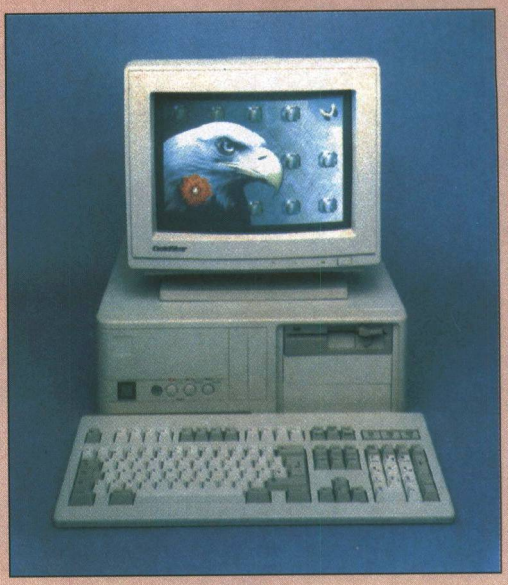
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| Apple | Powerbook 140; 170 | 4Mb (New) | £399 (A) |
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| Amstrad | Alt 386SX/286 | 4Mb | £120 (M) |
| AT & T | Safari NSX/20 | 2Mb | £149 (A) |
| AT & T | Safari NSX/20 | 4Mb | £325 (A) |
| Commodore | LT386SX/LT286 | 2Mb | £110 (E) |
| Compaq | SLT/286 | 1Mb | £95 (E) |
| Compaq | SLT/286 | 4Mb | £299 (E) |
| Compaq | SLT/386 | 1Mb | £95 (E) |
| Compaq | SLT/386 | 2Mb | £139 (E) |
| Compaq | SLT/386 | 4Mb | £280 (B) |
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| Compaq | LTE/286 | 2Mb | £99 (E) |
| Compaq | LTE/286 | 4Mb | £199 (B) |
| Compaq | LTE/386s/20 | 1Mb | £125 (E) |
| Compaq | LTE 386s/20 | 4Mb | £295 (E) |
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| Dell | 320LT & 316LT | 4Mb | £120 (M) |
| Dell | 320LT & 316LT | 6Mb | £180 (M) |
| Dell | 320LT & 316LT | 8Mb | £240 (M) |
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| Epson | Notebook 3S | 4Mb | £260 (A) |
| Elonex | LT 386SX/P | 2Mb | £60 (M) |
| Elonex | LT 386SX/P | 4Mb | £120 (M) |
| Everex | Tempo LX/20 | 2Mb | £110 (E) |
| Goldstar | GS520 386SX/16 | 1Mb | £120 (A/E) |
| Goldstar | GS520 386SX/16 | 4Mb | £249 (A/E) |
| HP | LS/12 | 1Mb | £110 (E) |
| HP | 95LX | 128Kb | £65 (S) |
| HP | 95LX | 256Kb | £110 (S) |
| HP | 95LX | 512Kb | £170 (S) |
| HP | 95LX | 1Mb | £320 (S) |
| IBM | L 40SX | 2Mb | £125 (E) |
| IBM | L 40SX | 4Mb | £189 (E) |
| IBM | L 40SX | 8Mb | £369 (E) |
| IBM | PS/2 P70-386 | 2Mb | £85 (M) |
| IBM | PS/2 P75 | 2Mb | £85 (M) |
| NEC | P/Speed SX/20 | 1Mb | £120 (B) |
| NEC | P/Speed SX/20 | 4Mb | £289 (B) |
| NEC | P/Speed 286; 386; SX/16 | 1Mb | £110 (B) |
| NEC | P/Speed 286; 386; SX/16 | 2Mb | £159 (B) |
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| Pack/Bell | PB386NBX | 4Mb | £295 (A) |
| Panasonic | CF170, 270, 370 | 1Mb | £69 (E) |
| Sanyo | 17NB & 18NB | 2Mb | £99 (E) |
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| Sharp | PC6641 | 2Mb | £140 (E) |
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| Sharp | Model 8081 | 1Mb | £99 (E) |
| Tandon | NB386SX | 1Mb | £90 (E) |
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| Texas | TM2000 | 1Mb | £89 (E) |
| Texas | TM3000 | 2Mb | £120 (E) |
| Texas | TM3000 | 4Mb | £159 (E) |
| Toshiba | T1000SE & XE | 1Mb | £70 (S) |
| Toshiba | T1000SE & XE | 2Mb | £110 (S) |
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| Toshiba | T1000SE & XE | 8Mb | £499 (S) |
| Toshiba | T1000LE/2000SX | 1Mb | £75 (S) |
| Toshiba | T1000LE/2000SX | 2Mb | £110 (S) |
| Toshiba | T1000LE/2000SX | 4Mb | £220 (S) |
| Toshiba | T1000LE/2000SX | 8Mb | £499 (S) |
| Toshiba | T2000SXe/2200SX | 2Mb | £110 (S) |
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| Zenith | Supersport 286E | 1Mb | £95 (A) |
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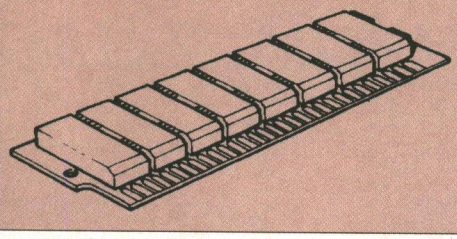
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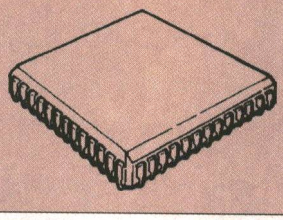
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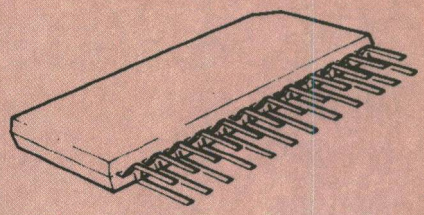
40M Board with 128K Cache .....+£231

33M Board with 128K .....+£150

EISA - 33 Cache Board .....+£1420







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| 1M x 9 – 80 | 34.00 |
| 1M x 9 – 100 | 33.00 |
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| 38700SX-20 | 80387SX 20 MHZ | £107.78 | £75.45 |
| 38700SX-25 | 80387SX 25 MHZ | £119.76 | £83.83 |
| 38700DX-16 | 80387DX 16 MHZ | £137.73 | £96.41 |
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| 38700DX-25 | 80387DX 25 MHZ | £137.73 | £96.41 |
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| DR 760 GRAPHTEC MP3200 PLOTTER | poa |
| DR 770 JOYSTICK FOR APPLE/PC/AT/386 | 18.00 |
| DR 780 JOYSTICK FOR AMSTRAD 1512/1640 | 18.00 |
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| G81-1800 102 key AT but only 19" wide with MY switch | 38.00 |
| G80-1220 102 keys with serial Int & ASCII | 80.73 |
| G80-1600 103 key PC/AT/PS2 with bar code/laser scanner interface | 135.82 |
| Barcode wand 630-0245 | 80.00 |
| G80-3100 102 key AT/PC/PS2 with magnetic card reader | 195.23 |
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| RAM (PER MEG) | 36.00 |

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| DR 320 1.2M 5.25" | black | 55.00 |
| DR 321 | ,, beige | 55.00 |
| DR 330 720K 3.5" Disc Drive | black | 44.00 |
| DR 331 | ,, beige | 37.50 |
| DR 332 1.44 | ,, beige | 41.42 |
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| 3.5.5.25 Converter frame to fit 3.5" drives | | 7.50 |

*** Above drives all TEAC, SONY or Mitsubishi ***

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| 3110 PC Hard Disc Drive set (2 cables) 34 way IDC Fem to 34 way card | |
| 20 way IDC Fem to 20 way Card | 6.00 |
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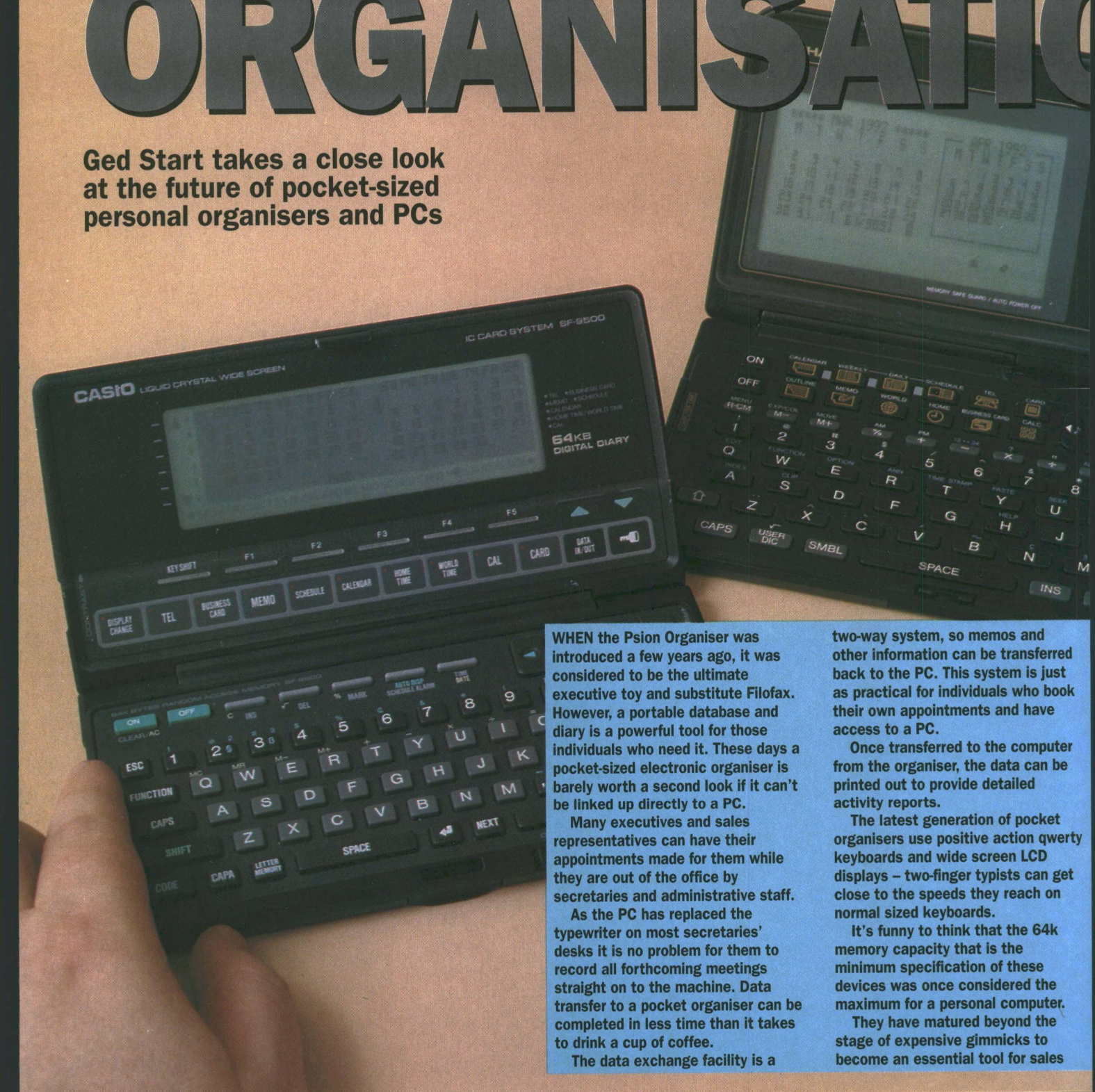
# DRAM ELECTRONICS

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# POCKETS OF ORGANISATIO

**Ged Start takes a close look at the future of pocket-sized personal organisers and PCs**




WHEN the Psion Organiser was introduced a few years ago, it was considered to be the ultimate executive toy and substitute Filofax. However, a portable database and diary is a powerful tool for those individuals who need it. These days a pocket-sized electronic organiser is barely worth a second look if it can't be linked up directly to a PC.

Many executives and sales representatives can have their appointments made for them while they are out of the office by secretaries and administrative staff.

As the PC has replaced the typewriter on most secretaries' desks it is no problem for them to record all forthcoming meetings straight on to the machine. Data transfer to a pocket organiser can be completed in less time than it takes to drink a cup of coffee.

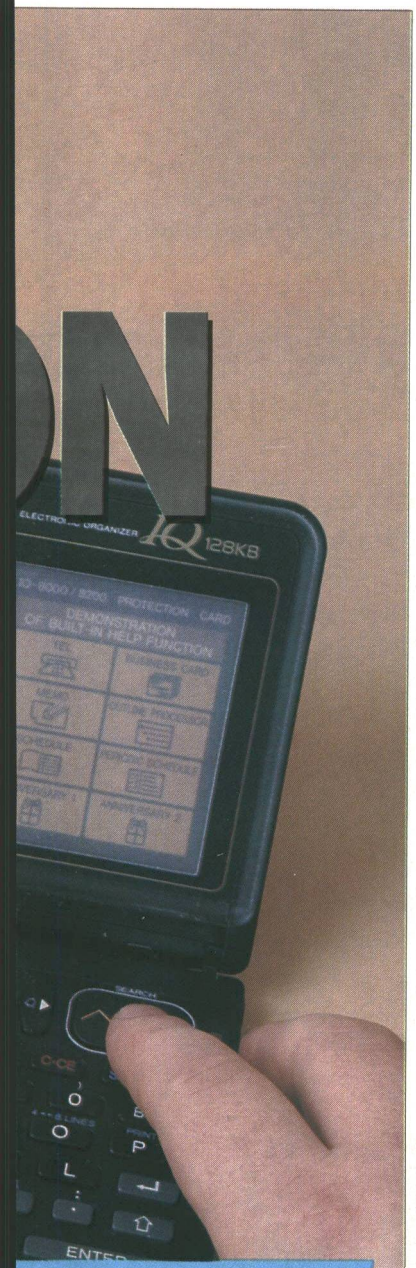
The data exchange facility is a two-way system, so memos and other information can be transferred back to the PC. This system is just as practical for individuals who book their own appointments and have access to a PC.

Once transferred to the computer from the organiser, the data can be printed out to provide detailed activity reports.

The latest generation of pocket organisers use positive action qwerty keyboards and wide screen LCD displays – two-finger typists can get close to the speeds they reach on normal sized keyboards.

It's funny to think that the 64k memory capacity that is the minimum specification of these devices was once considered the maximum for a personal computer.

They have matured beyond the stage of expensive gimmicks to become an essential tool for sales




eople and busy executives. The ange of facilities on offer has been ncreased by having slots to plug in C cards that can be used to install dditional applications, or just to rovide additional data storage.

With independent software ompanies now developing job-pecific programs for users, the uture for manufacturers is now ooking better than ever.

I have been looking at two of the ost popular organisers available in head-to-head comparison: The asio SF-9500 Digital Diary and the harp IQ-8200 Electronic Organiser as well as some pocket-sized oftware.

The facilities provided by both the harp and the Casio are undamentally the same. The rinciple differences between the wo are in the method of operation nd physical characteristics.

## XIPpy: An exclusive preview

PRODUCT launches that result in major alterations to the production schedule of ***PC Today*** are quite rare. Most are announced well in advance and rumours of the product's development normally precede the announcement. When IS^2 contacted us and asked us if I would like to have a look at their pocket-sized PC, I naturally said yes.

When they sent a fax with some of the details of the product's specification I realised this was going to be one of the most significant new products in 1992 and altered my schedule to fit it in.

IS^2 are a multi-national company that resulted from a management buy out of the portable products division of Texas Instruments. They still distribute and support the TI-74 hand-held device produced as a sales aid for the financial services market.

By polling the opinions of their huge client base of TI-74 users – currently well in excess of 100,000 – they discovered the need for a new type of portable machine. One that filled the gap between hand-held devices and lap top PCs more effectively than products like the HP 95LX.

The development process was based on the requirements of the financial services market, an industry that employs thousands of field sales staff.

To meet the industries' needs they started with the software and then looked at the most suitable hardware configuration. The end result is the first PC in production that uses XIP (execute in place) technology.

The XIP technique runs with MSdos under standards laid down by the Personal Computer Memory Card International Association (PCMCIA) whose founder members included IBM, Intel, Microsoft and Compaq.

XIP technology enables programs to be accessed and run direct from a plug-in IC card. This eliminates the need for large amounts of ram to run the software and reduces the inherent time delays of ram-based systems.

A PCMCIA memory card has a storage capacity of up to 64Mb which can be used for both application programs and data.

The production model has been designated FINEX^2 and has slots for two PCMCIA cards which gives it massive potential for applications. As standard it only requires 128k of memory to operate.

For data communications and printing it has both RS232C serial and Centronics parallel ports fitted.

As an option, IS^2 can supply it with a Citizen PN48 portable printer and leather integrated carrying case.

It is larger than the HP 95LX in every dimension – 220 x 120 x 30mm and weighs 600 grammes. Although barely supporting the claim of being pocket sized the benefits of the larger keyboard have to be experienced to be appreciated.

The FINEX^2 is the only pocket-sized machine currently available that makes two-handed typing truly possible.

The first look the FINEX^2 has shown it to be a machine with massive potential at an extremely competitive price. XIP technology will soon find its way into a lot of portable machines, and laptops may never be the same.

***PC Today*** will be giving the FINEX^2 an in-depth examination in the very near future to test its performance and software thoroughly.

**Product: FINEX^2**
**Price: £450**
**Supplier: IS^2, Euro House, Apex Court, Woodlands, Almondsbury, Bristol BS12**
**Tel: 0454 617215**



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## Casio SF-9500 Digital Diary: Functional and nothing fancy

SMALLER and much less comprehensive than the Sharp IQ, the SF-9500 still manages to be a credit to the Casio range of products. Emphasising functionality rather than designer styling, its letterbox format screen and compact keyboard are highly practical if a little cramped.

It carries all the more important features found on the Sharp, only missing out the outline planner and the weekly displays. The size and shape of the screen makes these type of functions impractical.

Entering the basic information is again unnecessarily time consuming and complicated. Setting the correct date and time takes minutes rather than seconds, and cannot be completed without the help of the manual.

The Casio is less intuitive than the Sharp and data entry is much slower as a result. The most effective method of getting the information in is to use the PC Datalink pack that has to be bought as an add-on.

Creating new entries on the PC was much quicker than fiddling around with the tiny keyboard on the SF-9500. The connection through the serial port operated at 9600 baud which transferred the data quickly.




The 64k memory supplied as standard will hold a reasonable amount of information, but for real storage capacity an IC card is essential. The mechanism, for installing cards is similar to that used by Sharp and can be inserted just as quickly.

Although the cards are almost the same size, they are not interchangeable and users should not attempt to install the wrong one into either of the devices.

The alarm is considerably louder than the Sharp's, which was difficult to hear especially when being carried in a pocket. When scheduling an appointment, the alarm time is always set independently to give you the opportunity to set a lead time – after all, you won't want the alarm going off just as the meeting commences.

The quality of the LCD display is poor in comparison to the IQ, needing a control for adjusting the contrast to compensate for certain lighting conditions.

The keyboard action is light, but not very positive, accidental double entering of characters is a common occurrence. In its favour, the casing has a solid feel and it gives a good impression of durability.

In brief, the Casio is nothing fancy. It carries out its tasks in a functional and steady manner. Compared to the Sharp IQ it appears unfriendly in its operations, though anyone using the Casio exclusively probably wouldn't feel that way.

## Pocket Sales Force: With the HP 95LX user in mind

THE alternative to an organiser is to use one of the pocket PCs now available. The Hewlett-Packard HP 95LX mentioned earlier was the first and is the best known – ***PC Today*** carried out a full review in August last year.

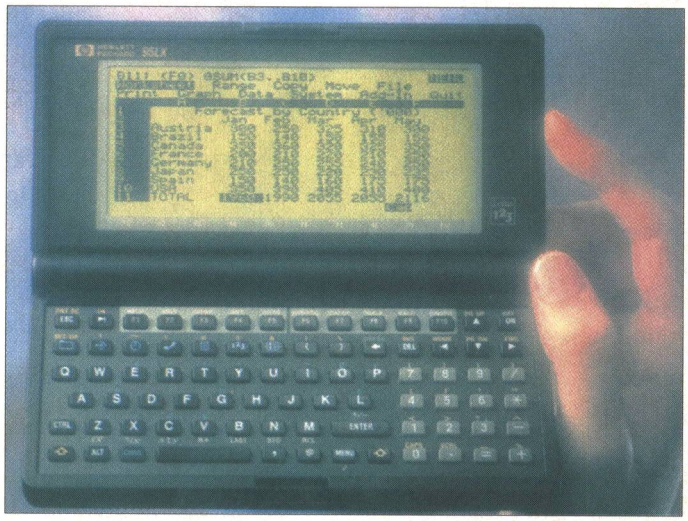
This highly rated pocket portable has been shipping in large quantities with very little opposition to date.

Now that Sharp and IS^2 have also stepped into the arena, prices for these are becoming much more competitive. Furthermore software companies are becoming more aware of the volume of pocket PCs and organisers in use and are starting to produce software specifically for them.

Oxford-based CMS Software have produced some excellent contact management software aimed at the pocket PC's biggest market, the field sales team.

Pocket Sales Force enables the user to list clients, book in appointments and record sales activity. The program has been designed with HP 95LX users in mind as it includes data export to Lotus 1-2-3 as standard.

Revised versions for use with other pocket PCs are already in the pipeline, as are IC card versions for pocket organisers. The software for the HP 95LX is provided on floppy disk and is transferred by an installation routine direct to the HP using the connectivity kit. The program can be configured to include user defined fields for the database and password security.



A head office version of the program called The Sale Clincher is also available for running on desktop PCs. This can be used on its own or in conjunction with Pocket Sales Force to provide a comprehensive management system that can generate detailed reports on sales activity, anticipated orders and action to be taken.

The facility for printing out client visit documents is particularly useful as they can be made to include a summary of the previous contact history. This information is essential for sales staff to enable them to be fully prepared before a meeting.

CMS are not the only company actively producing software for the HP, as Ipswich-based Deltasoft have introduced a range of 1-2-3 templates specifically for it. Again they have accurately targeted typical users, enabling them to take advantage of the spreadsheet power quickly and easily.

These templates make specialist calculations for such things as leasing and loan repayments including factors such as residual and accumulated values. These are the type of questions that sales people need to be able to answer swiftly if they wish to close a transaction and the Deltasoft products make it possible.

Further products are under development by both these companies and others. Limelight Software have just released a new database IC card for the Sharp IQ range. The complaints about the size of the keyboards and how fiddly they are will continue to be voiced, but pocket PCs and organisers are here to stay.

## Sharp IQ-8200 Electronic Organizer: A high quality piece of kit

THE slimline Sharp IQ is a beautifully made piece of equipment that combines high technology with designer appearance. The supertwist LCD screen is a good size and easy to read.

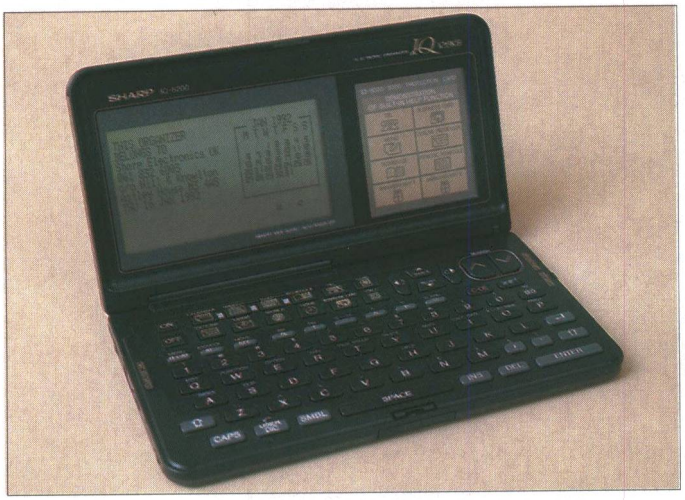
The keyboard is well made making data entry effortless. A bank of direct access function keys is placed directly above the standard keys. Each key has an icon and a label to make quick identification possible.

Pressing one of the icon keys takes you instantly to that function. Initially this will take several hours if there is a large number of records to be entered, especially in the Phone Book section. Configuring the basic information such as date and time is unnecessarily complex, requiring much consultation with the manual.

Recalling stored data is a much easier proposition requiring a minimal number of keystrokes. The Schedule function is probably the most used after the Phone Book and is very user friendly.

Each appointment is displayed separately in both the daily and weekly functions, making it possible to review the week's activities at a glance. The month display highlights any days where appointments have been made.

Other features include an outline planner and a memo facility for storing notes. Local time is displayed at the touch of a button though, like many others, I find it frustrating that manufacturers like Sharp assume that London is the only city in the United Kingdom – considering Sharp's main offices are in Manchester this is quite peculiar.



Fitting an IC card into place takes under five seconds. The IQ uses these cards in an unusual manner by making them touch sensitive. They are mounted to the right of the screen behind a transparent flexible cover.

Functions can be accessed from the cards by touching the appropriate icon through the cover. A demonstration card providing help functions is provided as standard with every new IQ.

The pack for linking the IQ-8200 to a PC is marketed as a separate item under the model number IQ-890. It includes the PC software and the necessary cables for connection via the serial port.

The software includes all the main functions offered by the IQ to enable you to transfer data between the two devices. This system makes it possible for appointments and client records to be prepared while the IQ user is out of the office.

Overall the IQ-8200 is a high quality piece of kit. The unusual keying in procedures would seem natural after a few days of using it. It is quite a lot better than the Casio on test, but it also commands a higher price tag. If price is not a barrier and its potential would not be wasted, the IQ-8200 is a good buy.

## PC or not PC?

CHOOSING a pocket organiser is becoming harder as there are now some high quality models like the Hewlett-Packard HP 95 ***PC Today*** reviewed in August last year.

With many of the same built-in facilities as the SF-9500 and Sharp IQ, it also has Lotus 123 supplied as standard. Because it uses PC XT architecture it can be made to work in the same way as a normal desktop machine and run PC software.

The cost of the HP 95LX is substantially more than the organisers, but is worth considering because of its greater flexibility. Many dealers are now offering it at reduced prices and it is generally available for under £450.

Sharp have produced their own palmtop computer to rival the Hewlett-Packard. The PC-3000 will be introduced to the market for around £650 and although it won't include Lotus 1-2-3, it will have a comprehensive list of software built in including LapLink for file transfer to other machines.

Another pocket-sized PC from IS^2 is also about to reach the market. The FINEX^2 is specifically targeted at the financial services market, and has pre-launch orders for around 50,000 units.

The narrow marketing for the FINEX^2 will limit its appeal as a general purpose portable, but it is expected that it will soon be available with more universal applications.

Pocket organisers are not intended to be PCs, they are exactly what they set out to be. The PC connectivity options are to make them more practical, not to attempt to convert them into low power computers. Subsequently the prices for the organisers are lower, in line with their capabilities.

The final buying decision will, as always, rest with the end users as they are the only who are ones in a position to assess accurately their requirements.

Somebody requiring a diary system and nothing else should choose an organiser. On the other hand if that person has the need to run full PC software or have access to spreadsheet information a pocket PC will be a worthwhile investment.

## Pocket organiser best buy

THE Sharp IQ is undoubtedly the better of the two, offering superior features and more memory. However, it is more expensive than the Casio Digital Diary.

Where the Sharp really wins through is in the cost of the connectivity pack – when the combined cost is compared against the Casio setup it is only about £15 more expensive.

The Casio Datalink is easier to use than Sharp's Organiser Link, but it does not warrant such a high additional expense. Overall the Casio is good at its job, but is quirky. The Sharp offers a lot more and of the two it is the best buy.

## HARDWARE

**Product: IQ-8200 Electronic Organizer**
**Price: £221.27**
**Product: IQ-890 Organizer Link**
**Price: £52.76**
**Product: PC-3000**
**Price: £680.85**
**Supplier: Sharp Electronics UK, Sharp House, Thorp Road, Manchester M10 9BE**
**Tel: 061-205 2333**
**Product: SF-9500 Digital Diary**
**Price: £165.95**
**Product: Datalink for the Casio Digital Diary**
**Price: £94.99**
**Supplier: Casio UK, Unit 6, 1000 North Circular Road, London NW2 7JD**
**Tel: 081-450 9131**
**Product: HP 95LX**
**Price: £449**
**Product: HP 95LX Connectivity Pack**
**Price: £68.35**
**Supplier: Hewlett-Packard, Amen Corner, Cain Road, Bracknell, Berkshire RG12 1HN**
**Tel: 0344 360000**

## SOFTWARE

**Product: Pocket Sales Force for the HP 95LX**
**Price: £99.95**
**Product: The Sale Clincher Executive version 2.0**
**Price: £695**
**Supplier: CM Software, Business Unit 1, 33 Sandford Road, Littlemore Oxford OX4 4XT**
**Tel: 0865 748875**
**Product: @Invest**
**Price: £79**
**Product: @Loan**
**Price: £99**
**Product: @Lease**
**Price: £99**
**Supplier: Deltasoft, 110a Victoria Street, Ipswich IP1 2JX**
**Tel: 0743 233234**
**Product: The Database Card**
**Price: £119.14**
**Supplier: Limelight Software, Unit 3, Ealand Science Park, Wharf Road, Ealand Scunthorpe, South Humberside DN17 4JW**
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# BAUD

## Jim Hoggarth pits an old US comms program against a UK newcomer in a head-to-head battle

AFTER many months of saving, you finally place an order for that shiny new modem. It arrives, you eagerly configure it and plug it in. Hang on, though. Where are the bulletin boards and online services? Which MSdos command do you use?

The sad fact is that a modem is just another piece of useless hardware without the right software, and MSdos knows nothing of its presence.

What is needed is a communications program – something to control the hardware, pass your keyboard input to the modem and to accept and display data travelling in the opposite direction.

Indeed this has always been the case ever since the introduction of MSdos. In those early days communications packages for the PC were rare, if not non-existent.

And the growing number of US computer hobbyists demanded the ability to communicate electronically, not least because of the distances involved.

The solution was to write their own programs and protocols, and out of this early public domain and shareware spirit grew the likes of the first comms package reviewed here, the complex and powerful Qmodem.

It would be interesting to compare this to a UK-developed product, so also on test here is O/Talk-3, a package designed for easy use and specifically tailored to a couple of unique UK requirements.

## Qmodem: A mind-boggling range of features and options

THE first thing that strikes you about Qmodem, now well into its fourth major release, is the sheer number of features and options. The majority are configured through the dedicated installation screen which boasts a complete pull-down menu system of its own. The sturdy and well written ring-bound manual devotes a full 50 pages to these.




❑ ***All the colours used within Qmodem can be changed, even down to the smallest of details***

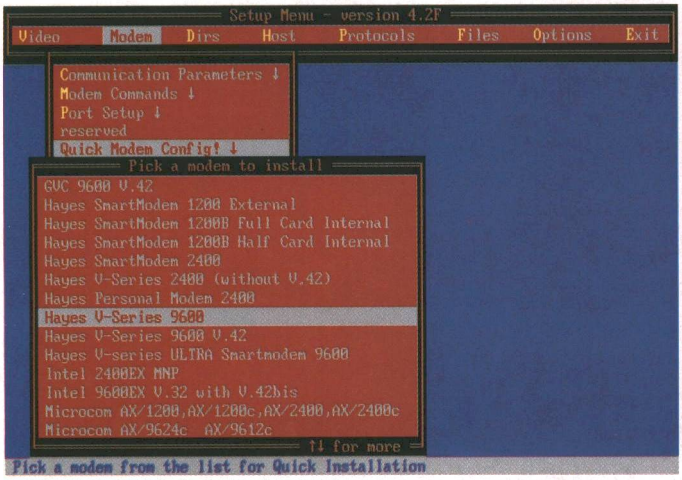
Unfortunately, within the space allocated for this review, it would be impossible to itemise all the features on offer without it reading like a technical specification. It would be far easier to mention those features not supported.

So I have chosen to highlight particularly interesting or essential aspects only. Suffice it to say that if you want it, Qmodem's probably got it.

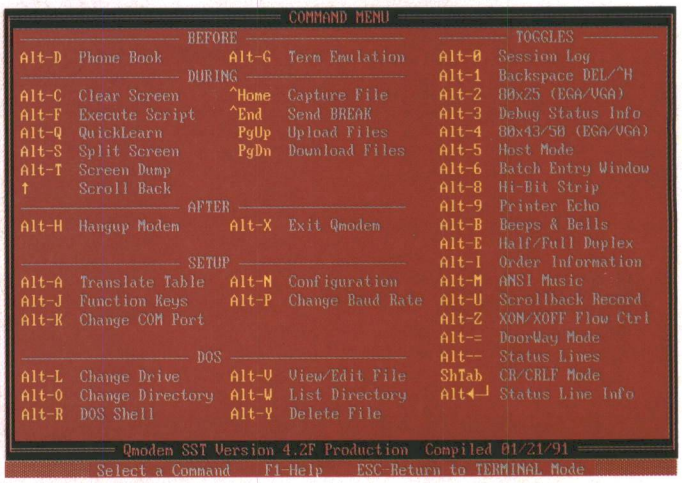
For starters, it supports a modem installed in any of eight COM ports. The base address and IRQ (interrupt request) number can also be set for any port so that even the strangest of configurations should be usable, not just the PC's defaults.

As for modem installation, this can be achieved in two ways: Either pick a pre-configured modem name from the list – with plenty to choose from – or do it all the hard way and enter the modem initialisation strings by hand.

The modems listed are US devices so unless you have a truly Hayes-compatible model, manual installation is recommended. A nice touch is the modem notes window where




❑ ***Selecting a modem type for quick configuration. The majority are US manufactured, but many are Hayes-compatible***



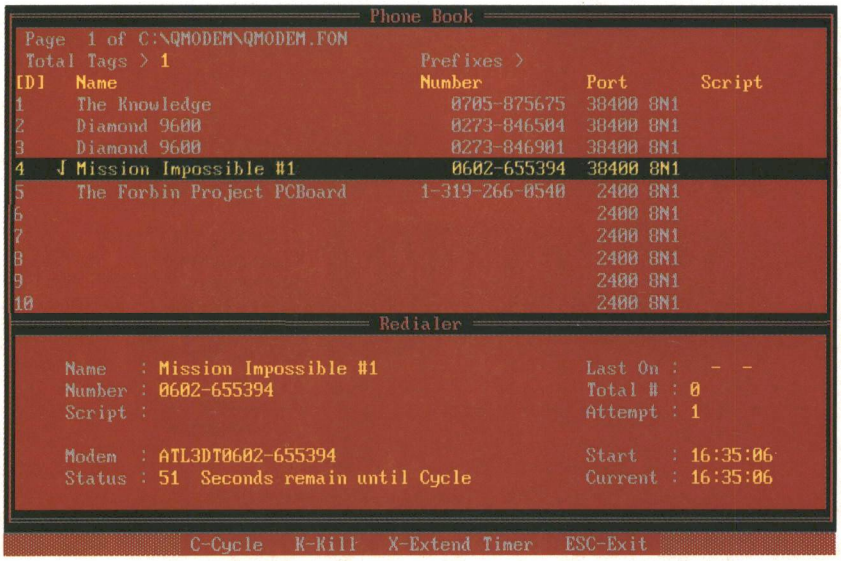

❑ ***Not really a help screen as such, but a breakdown of the common keyboard commands used to control all Qmodem's aspects***

# NOT BORED

you can enter explanatory details concerning the current setting for future reference.

There are also many modem hardware and handshaking options, including the ability to recognise the 16650 UART (a high speed, buffered serial chip). Another option enables the RTS line to be held high during hard disk writes.

In layman's terms this avoids breaks in transmission at the remote end due to a local disk write, although this is only recommended for use with modern high-speed or error correcting modems.




❑ ***Within the dialing directory, or phone book as it is titled here. Below the list of systems the key commands are shown***

## File transfer paths

MANY other comms packages only allow for two file transfer paths to be defined (if at all), one each for uploading and downloading. Qmodem retains these, plus it adds three directories for batch processing.

If you regularly transfer files to or from the same system – probably files with the same names every time – Qmodem lets you define up to three batch configurations.

Within each, 20 filenames can be given, even using wild-cards such as *.DBF. Regular upload/download sessions can then be totally automated to the point of pressing just one key.

While on the subject of keys, this program sets great store by the Control and Alt keys in combination with many of the other character and function keys. Despite using a pull-down menu for configuration, the main terminal screen has no such options.

All commands are accessed through unique key combinations. Thankfully most are easily remembered by the character, although some are pretty obscure. I can see how Alt+C means Clear screen, Alt+D is Directory and so forth, but the authors must have exhausted the key supply when selecting Alt+0 for log to file and Alt+= for doorway access.

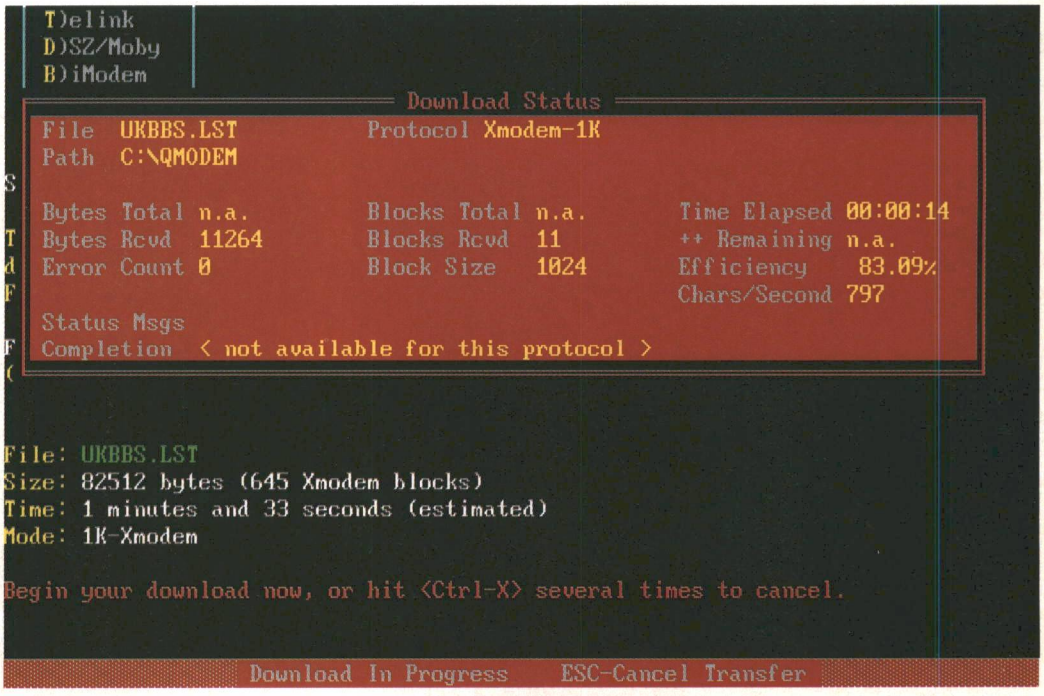
The dialing directory itself is nice to use. The screen can seem a little cramped with only 10 entries on view at a time, but this can be increased by selecting the 43 or 50 line text modes available on EGA and VGA screens respectively.

Another nice feature is function key macros. All 12 keys in combination with the Shift, Control and Alt states can be assigned to a text macro. This could be as simple as echoing a preset password when prompted by a remote host, or as complex as running a complete script file.

You could even fully automate your file transfer requirements or check for mail at the press of a key. This serves as a good way to run scripts, which are themselves very powerful.

I found the Qmodem script language easy to use, near enough to English not to look too much like a programming language, and with enough

➤




❑ ***A file download in progress using the Xmodem-1K protocol. The transfer rate is around 760 characters a second at 9600 baud***

commands available to actually perform some useful tasks.

About 60 pages are needed to cover these in the manual, so this gives you an idea of the breadth of macro command coverage.

There's so much more I would like to describe but can't, such as the internal text editor, the host mode (which is almost good enough to act as a bulletin board in its own right), text file viewing and the QuickLearn script recorder. I must just squeeze in the fact that internal file transfer protocols include Ascii, Xmodem (five revisions), Ymodem, Ymodem-G and Zmodem. An additional nine external protocols can be added for the likes of Kermit, BiModem, Puma and CompuServe-B.

It is also worth mentioning that Qmodem can run within the DESQview, TaskView and Windows 3.0 operating environments.

One extra point in Qmodem's favour is that during tests it never let me down once. Admittedly I made mistakes, usually as a result of pressing the wrong keys.

However, many of the short-cut keys are identical to those found with other popular comms packages I have used in the past, including the now withdrawn shareware program Procomm.

## PROFILE

**Product: Qmodem SST 4.2F**
**Price: £79.95**
**Supplier: Multidata Communications, Unit 4, Shrivenham Hundred Business Park, Swindon SN6 8TZ**
**Tel: 0793 782450**

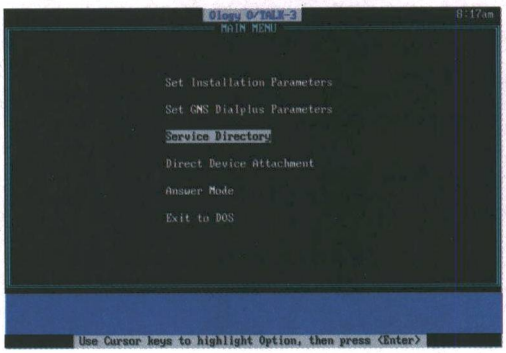
## O/Talk-3: A no-frills business tool suited to mainframe links

THIS is an altogether different package. Written with the requirement that it be as easy to use as possible, every feature is accessed from onscreen menus or lists with only the occasional use of a function key and not a Control or Alt key combination in sight.

The only hardware restriction is that a Hayes compatible modem is used. The program automatically appends the familiar Hayes AT stub to all initialisation strings.

Any general configuration is handled from the first option in the somewhat sparse main menu screen. The remaining entries allow the GNS DialPlus specific details to be set, telephone directory access, direct device attachment (connecting to another computer by cable rather than modem) and entering the limited, but useful answer mode.

The first of these is normally a once-only task, setting the way in which O/Talk-3 interacts with the modem. Options on offer are the absolute minimum required, including the serial port used from COM1 to COM4, tone versus pulse dialing, the Hayes initialisation string and flow control.




❑ ***The O/Talk-3 main menu comprises just the five entries. It is a clue to the relative simplicity of the program***

The last of these caters for the usual hardware against software handshaking of RTS/CTS and XON/XOFF. Other elements are the modem response strings following a successful or otherwise dialing attempt and directory paths for both the save and spool files. In the first instance, O/Talk-3 can save a single screen to disk, in the second all incoming data is spooled to a disk file.

The GNS DialPlus feature puts this program into a rather special category. Whereas Qmodem is American in origin, O/Talk-3 is wholly designed for the UK market. Apart from our unique requirements for 40-column text and graphics ViewData support (Prestel, Telephone Banking, Home Shopping and so on) – which O/Talk-3 supports fully on EGA, VGA and MCGA video systems – British Telecom's DialPlus PAD network is also handled automatically.

This is a system of UK-wide nodes usually accessible at a local call rate and specifically designed for the providers of on-line services.

With its full V42 error correcting link, business users will find O/Talk-3's automatic DialPlus connection and disconnection convenient.

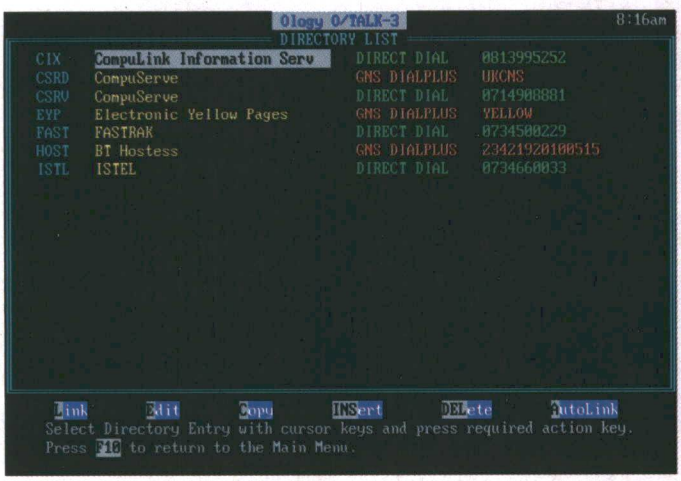
Working down the main menu, the next option is the normal working area. The directory lists all services available and any can be added or changed as required.

The main directory screen shows only the service nick-name, full name, connection type (direct versus DialPlus) and telephone number or DialPlus code. But many more parameters are found in the full edit screen for each entry.

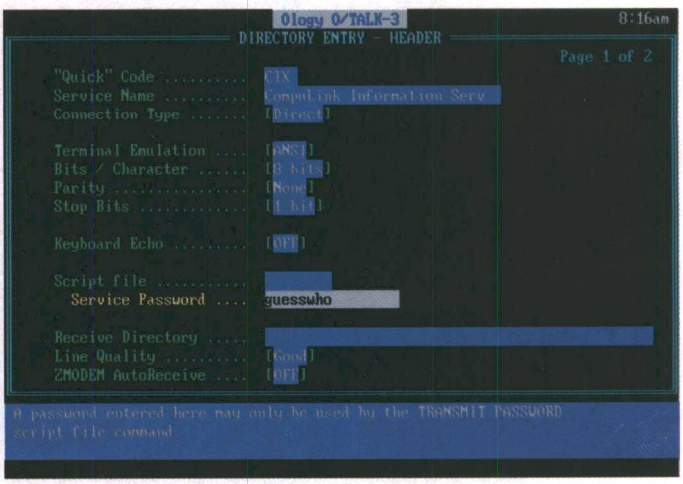
These include the emulation, selectable from ANSI, VT100 and ViewData, modem data bit sizes, keyboard echo status and logon script file name.

Further fields define the Zmodem auto-receive switch, file download directory and line quality setting for this telephone number.

The second edit screen varies depending on the connection type selected. For DialPlus you enter the password and remote system menu status, plus the Network




❑ ***The directory screen is clear and uncluttered. The options shown at the bottom are for editing entries***




❑ ***Changing an O/Talk-3 directory entry. This is the first and most extensive page of options***



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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ✔ | ✔ | | | ✔ | ✔ | ✔ | ✔ | (a) | | | | | | 0.1 | | | | | | | **£79** Husky (Internal) **£99** (External 240v) |
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| 9600 | 9600 | ✔ | ✔ | | | ✔ | | ✔ | ✔ | | | ✔ | ✔ | | | 1 | | | | | | | **£149** Econofax (Internal PC Half-card) |
| 4800 | | ✔ | ✔ | | | ✔ | | ✔ | ✔ | ✔ | | ✔ | | | | 1 | | | | | | | **£159** Compact Junior (Tiny portable, 9v battery) |
| | | ✔ | ✔ | | 5 | ✔ | | ✔ | ✔ | ✔ | ✔ | | | ✔ | ✔ | 5 | | | | | | | **£169** SupraModem2400plus (External 240v) |
| | | ✔ | ✔ | | 5 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | | | ✔ | ✔ | 5 | ✔ | | | | | | **£219** Omnitel 2400S+ Bison (External 240v) |
| | | ✔ | ✔ | ✔ | 5 | ✔ | | ✔ | ✔ | (a) | | | | | | 5 | | | | | 9600 | ✔ | **£233** Champ (Internal) £266 (External 240v) |
| 9600 | 9600 | ✔ | ✔ | ✔ | 5 | ✔ | | ✔ | ✔ | (a) | | ✔ | ✔ | | | 5 | | | | | 9600 | ✔ | **£333** Combo (Internal) £366 (External 240v) |
| 9600 | 9600 | ✔ | ✔ | | 5(a) | ✔ | | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔(a) | ✔(a) | 5 | | | | | | | **£333** Compact (Tiny portable, 9v battery) |
| (a) | (a) | ✔ | ✔ | ✔ | 5 | ✔ | | ✔ | ✔ | ✔ | | (a) | (a) | (a) | (a) | 5 | | 9600 | | | (a) | (a) | **£299** Storm |
| (a) | (a) | ✔ | ✔ | ✔ | 5 | ✔ | | ✔ | ✔ | ✔ | | (a) | (a) | (a) | (a) | 5 | | 9600 | 14400 | | (a) | (a) | **£399** Star |
| | | ✔ | ✔ | | 5 | ✔ | | ✔ | ✔ | ✔ | ✔ | | | | | 2 | ✔ | | | 14400 | | | **£399** Miracom Courier HST |
| | | | | | 5 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | | | ✔ | ✔ | 2 | ✔ | 9600 | 14400 | 14400 | | | **£599** Courier Dual Standard ('Everest') |
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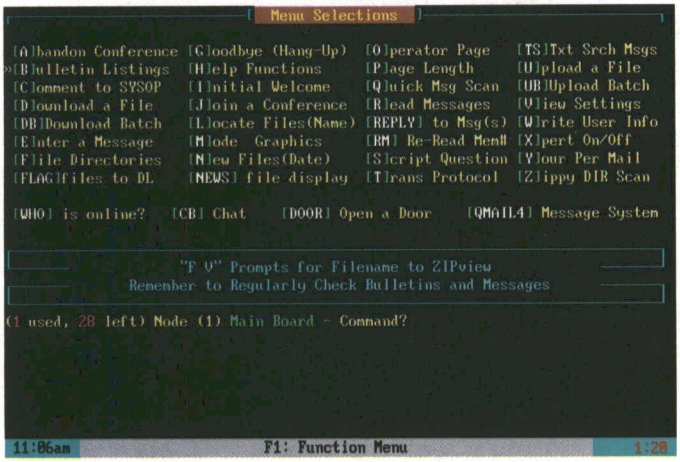
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❑ ***On-line with O/Talk. A simple status bar at the bottom of the screen is the only contribution made by the program***

➤

User Address (a unique identification code issued by private services for user access).

For direct dial connections you must enter the phone number and modem reset string, the line duplex type and DTE speed – the baud rate at which the PC talks to the modem, rather than the modem to modem connect speed.

So far as configuration goes, that is the sum of O/Talk's flexibility. In theory it is now possible to go on-line with any of the remote systems you have entered. Once connected all features are selected from the 10 function keys.

## On-line features

THESE amount to a very simplistic and combined help box and command selection list – duplicating the function keys – plus a screen scrolling lock, file transfer requests and a print-screen facility.

Also there's the already mentioned screen save and spooling, the ability to execute a script file, shell to Dos and finally the disconnect key which drops the line and effectively replaces the receiver.

Of these functions two are worth looking at further. The package handles file transfers competently and I particularly liked the way errors are presented as a percentage. The characters per second transfer rate count is also updated regularly.

The program comes with just the four internal protocols – Xmodem, Ymodem, Zmodem and Sliding Windows Kermit. Zmodem is one of the quickest general-purpose protocols currently available and Kermit a slower, but almost universal standard to fall back on.

There's no external protocol support unfortunately, but the above should suffice. It would have been nice, however, to gain access to some of the more recent drivers which include features like uploading, downloading and chatting on-line concurrently.

Finally, there is the script language. Designed to automate often repeated tasks in the same manner as a spreadsheet's macro language, scripts are simple text files created with any editor. In fact, simple is just the right description here, as the manual needs only nine pages to list all the commands.

Basically you can select protocols, instigate file transfers, automatically send a logon password, execute MSdos commands and perform a number of ancillary tasks. As the manual points out, this is often all that users require from a script language and I totally agree.

What I must disagree with is whether that's a valid reason for omitting other more obscure, but perfectly reasonable commands.

## Teething troubles

IN use, O/Talk-3 presented a couple of problems, although the review copy was a pre-release version of a new product and matters may well have changed in the meantime.

The first was easily overcome once the cause had been located, but is a definite nuisance and may well lead to confusion for the novice. When I attempted to connect to any service at 2400 baud, O/Talk-3 dropped the line after only a few seconds.

The message displayed indicated that a successful connection couldn't be made. In reality the two modems were still exchanging parameters, as I use a V32 9600 baud auto-seeking model with V42 MNP-5 error correction as standard.

As my modem had only just synchronised with the remote unit's 2400 baud rate and was still interrogating the other for an error correction protocol, no connect message had yet been generated. O/Talk-3 took this as a bad connection and unceremoniously dropped the line.

I followed the manual's recommendations regarding the modem's DCD line status trying half-duplex mode, but to no avail.

The ultimate solution was to configure the modem for immediate 2400 baud operation and error correction disabled. This way a CONNECT 2400 message came through in time to prevent a dropped carrier.

Unfortunately, similar problems were found on true 9600 baud connections, this time just the error protocol handshake adding to the connect time.

Again I had to disable the V42 option, which as any regular modem user will know is almost essential for a reliable 9600 baud connection.

Of course, nowhere in the configuration is there a means of extending this failed connection time-out, one of the drawbacks with a simplistic approach to comms programs.

I was also a bit concerned about how O/Talk-3 sometimes froze on a bad initial connection, the normal F10 Abort key having no effect.

On one occasion after a successful link with a bulletin board, the line was even left open.

It was only when I picked up the voice hand-set later that I realised and pulled the plug. And it wasn't at cheap rate either!

## Conclusion

THERE can be no doubt as to where the individual strengths of these packages lie. O/Talk-3 is a no-frills business tool. If the manager declares that AutoPay or Prestel access is essential, then it is probably the perfect candidate. That is assuming the problems I encountered are rectified shortly.

It is also well suited to mainframe links with its DEC VT100 terminal emulation and in-built Kermit file transfer protocol. The O/Talk-3 manual points out that its simple philosophy avoids complicating further an already tricky subject and was designed from the outset for the everyday user.

Within an office environment simplicity is certainly very desirable. The time taken for staff to become familiar with the program is short, and there are no potentially hazardous program options with which the curious office junior can tinker.

But if you're looking for a communications package for your own personal use, are perhaps already acquainted with comms or are in any way inquisitive about computers in general, O/Talk's limitations may soon be reached.

Although Qmodem has what appears to be a bewildering array of features, within a relatively short time all the basic essentials can be conquered.

Only at a later date need you concern yourself with the likes of auto-logon scripts, installing external protocol drivers or any of the other advanced options.

Unless you need specific support for ViewData or DialPlus systems, Qmodem can handle all that O/Talk-3 can and more. I would put my money on the former.

## PROFILE

**Product: O/Talk-3 1.1**
**Price: £120**
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**(This is the fax modem supplied by us to Personal Computer World Magazine for their 5 page glowing review of WINFAX PRO in the November 1991 issue, also PC Today November review of WINFAX PRO and three other magazine reviews of WINFAX PRO. If you need a fax to work under Windows 3, then this is it).**

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| Clockspeed | 20 Mhz | 25 Mhz | 33 Mhz | 40 Mhz | 33 Mhz | 33 Mhz |
| RAM on Board | 1Mb | 1Mb | 1Mb | 1Mb | 1Mb | 4Mb |
| RAM Expandable to | 4Mb | 16Mb | 32Mb | 32Mb | 32Mb | 64Mb |
| Memory Cache | – | – | 64k | 64k | 256k | 64k |
| Floppy Drives | 1.2 &1.44 | 1.2 &1.44 | 1.2 &1.44 | 1.2 &1.44 | 1.2 &1.44 | 1.2 &1.44 |
| Hard Drive Capacity | 44Mb | 44Mb | 44Mb | 44Mb | 44Mb | 44Mb |
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DAVID MELLOR , Sound On Sound Jul. 1990

PRISM
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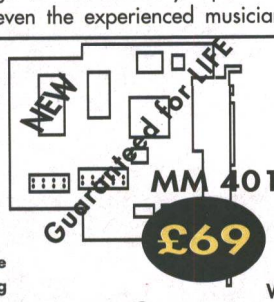
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# DOWN MEMORY LANE

**Roland Waddilove tries several hardware and software solutions to the problem of ram shortage**

IF you are an average PC user you're probably sat at a machine that has at least 1Mb of memory and possibly several megabytes. Yet you may be wondering why there is still only 640k free for programs and after you have installed a few TSRs or a network, there isn't enough ram left to run your applications. Surely you can't have used up all those megabytes?

The problem is a historic one that relates to the very first IBM PC. In a nutshell, this was a 64k machine and the processor could access 1Mb of memory. In the 1Mb memory address space there need to be roms for the video and bios, expansion cards and so on, so Bill Gates and his programming team partitioned the memory into two sections – lower and upper.

They thought that 10 times the current ram size would be sufficient for programs to run in and reserved the upper memory from 640k to 1Mb for all the other stuff, like roms and so on. All later processors emulate that first one in the IBM PC and all later versions of MSdos stick to that old memory map. That's why, even now, you've only got 640k to run programs in.

However, there are some clever software and hardware solutions to the memory problem and in this review I take a brief look at several on offer.

## Everex Maxi Magic EMS: Hardware solution for XTs

THE Everex Maxi Magic EMS board is a full length 8-bit expansion card intended for old 8088/8086-based XTs. In fact, the card itself looks to be quite an old design. Onboard are 72 sockets which accept 256k x 1-bit chips to make a total memory capacity of 2Mb.

If your PC has less than the full 640k of base memory, such as 512k, part of the Maxi Magic ram can be made to appear as base memory to fill the gap. A bank of dip switches on the card are used to set the amount of ram to add to the base memory. The manual provides clear instructions for setting these dip switches, and any others you might encounter on the PC's motherboard.

Once this has been done, the Everex card can be installed in the system unit of the PC. The software provided has to be copied on to the hard disk manually as there isn't an install program – the most important file is the device driver that ensures MSdos can access the expanded memory.

Two other utilities are a ram disk and print spooler. The ram disk is set up pretty much the same way as the MSdos and can use either part of or all the expanded memory. The same goes for the print spooler.

The Everex board looks to be well made and is easy to install thanks to a good manual. Recommended.

**PROFILE**

**Product: Everex Maxi Magic EMS**
**Price: £80 (1Mb), £125 (2Mb)**
**Supplier: Powermark, Premier House, 112 Station Road, Edgeware, Middlesex HA8 7AQ**
**Tel: 081-951 3355**

## Kingston KTM-16AT: Memory expansion for ATs and 386SX

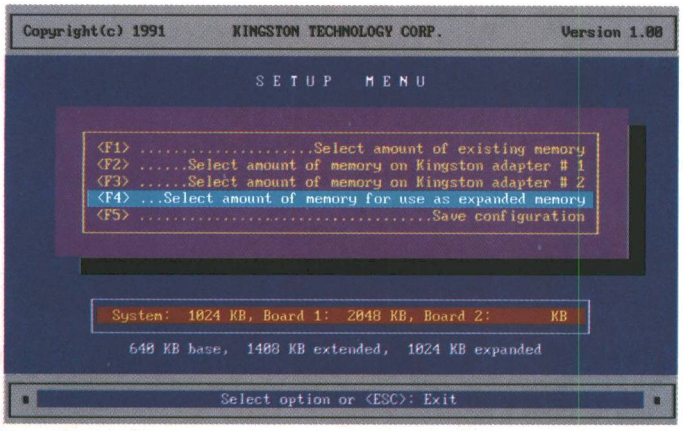
The Kingston KTM-16AT memory expansion board is completely different to the Everex. It is a 16-bit board, just over half length, that can only be used with 286 and 386SX-based computers.

A quick glance over the card is sufficient to see that it is a fairly modern design – there are no memory chips and sockets, instead there are four SIMM slots grouped into two banks. You can use either 1Mb or 4Mb SIMMs, but each bank must be fully populated. This means you can have 2, 4, 6, 8, 10 and 16Mb of extra memory.

The KTM-16AT card is plugged into any free expansion socket on the motherboard and three banks of dip switches might need to be set to tell the system how much memory there is.

Installation of the software – a driver program – is partly manual and partly automatic. You have to copy the driver to your boot disk, but the configuration is performed using a very easy-to-use utility. It's menu-driven and first you tell it how much memory you currently have in the system. Then you set the amount on the expansion card, and finally decide how much to allocate to expanded memory and how much to extended.

It's a nice product and one that could be very useful for 386SX and 286-based PCs with limited expansion.




*❑ The setup utility for the Kingston board enables you to define the amount of extended and expanded memory*

**PROFILE**

**Product: Kingston KTM-16AT**
**Price: £235 (4Mb), £345 (8Mb)**
**Supplier: Powermark, Premier House, 112 Station Road, Edgeware, Middlesex HA8 7AQ**
**Tel: 081-905 6233**

## HI386: Interesting, but limited, memory manager

HI386 from RYBS Electronics is a software solution to the memory problem. In order to be able to use it you must have either extended or expanded memory, a 386 or 386SX, or Chips and Technologies chipset.

The software scans the upper memory between 640k and 1,024k for unused areas and joins these to provide space for TSRs, device drivers and so on.

Installing HI386 was quite a frustrating experience as the procedure seems full of bugs. It's supposed to be automatic, but it doesn't work, and even when done manually, it still screws things up.

This makes it unsuitable for a novice user, but anyone who is familiar with editing the AUTOEXEC.BAT and CONFIG.SYS files should be able to get it going.

On my 386SX with 4Mb of ram it gave me 725k of memory free for Dos. However, the largest program that could be loaded was 561k. The difference between the two figures – 164k – is called AMS memory and this is a special high memory area which can be used for your TSRs and device drivers.

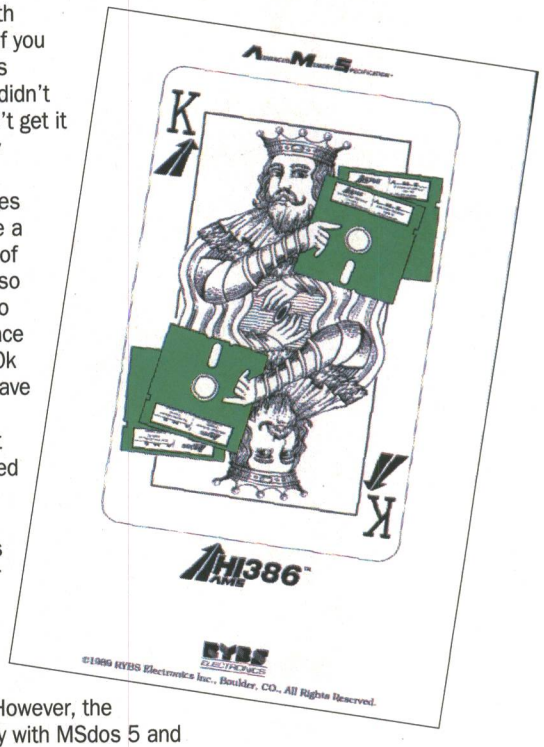
There are two special commands for loading programs up high – LOADHIGH and DEVICE. Unfortunately, DEVICE is incompatible with MSdos 5, but LOADHIGH works OK. Replacements for FILES and BUFFERS force them to use high memory, but again they don't work with MSdos 5.

The documentation claims it is compatible with Windows 3.0 if you have the Chips chipset, but I didn't and so couldn't get it running on my machine.

HI386 makes available quite a large amount of high memory so it's possible to gain extra space below the 640k mark. If you have a lot of programs that could be moved up and you mainly use Dos programs running under MSdos 4.01 or 3.3, HI386 is worth considering. However, the incompatibility with MSdos 5 and Windows rules it out for me.

**PROFILE**

**Product: HI386**
**Price: £49**
**Supplier: MPC International, 7 Kenwyn Drive, London NW2 7NY**
**Tel: 081-208 4443**








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## ATLast!: Quite a clever utility

IN many a ways, ATLast! is very similar to HI386 as it performs basically the same functions. However, the difference is that ATLast! is more automated and transparent to the user.

It runs on a variety of hardware and MSdos combinations and I tried it on a 386SX with 4Mb of memory and MSdos 5.

There is a special automatic installation utility for MSdos 5 and it attempts to modify the CONFIG.SYS file. It displayed an error message, but continued anyway and did most of the installation work. However, I still needed to run a utility and then modify CONFIG.SYS manually afterwards.

Once the system had been rebooted with the new configuration, all my TSRs and devices disappeared from the memory map as if by magic. ATLast! moves them up into high memory out of the way and so makes more base memory free.

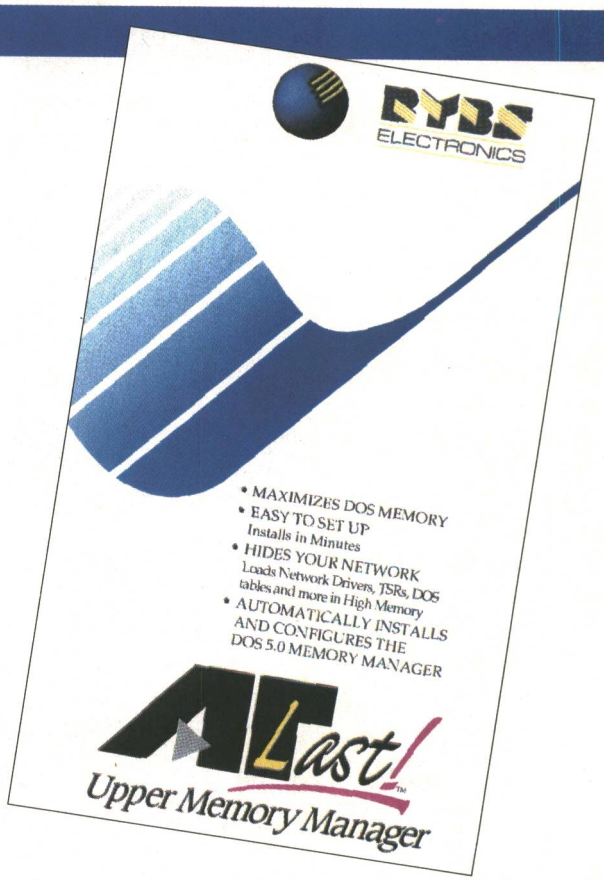
It's really quite clever because whenever you make a change to the AUTOEXEC.BAT and CONFIG.SYS file it automatically detects what you have done when you reboot next time and optimises the memory usage.

On my 386SX it gave 620k free even though I had installed SHARE, DOSKEY, a mouse driver, SMARTDRV, HIMEM, EMM386 and a TSR utility.

Like HI386, I couldn't get it working with Windows 3.0, which was a major disappointment as I use it quite a lot. If you don't intend using Microsoft's GUI it represents quite an effective way of gaining more memory.

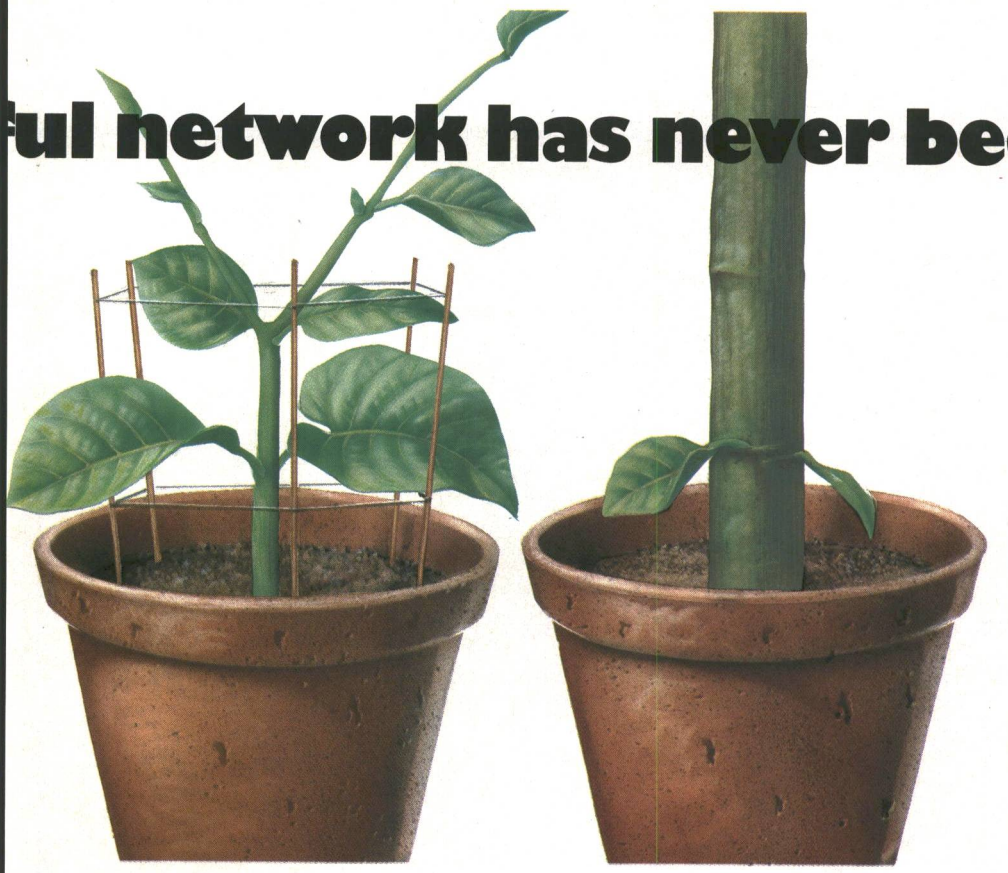
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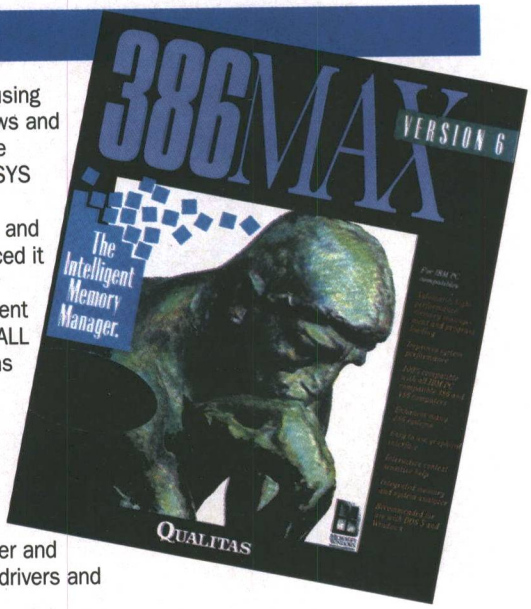
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## 386MAX: Fully automatic optimisation

QUALITAS have put much time and effort into the user interface of the strangely named 386MAX. This product is a software memory manager designed for 386 and 486 PCs, but it also provides some support for 286 systems with Chips and Technologies chipsets.

The superb software has mouse control, pop-up windows, pull-down menus, and is a delight to use. Everything is fully automated and most of the time you'll just need to click on the OK button – you can also use the keyboard. Online help is available at all times.

Installation is fully automatic and you are led through the various stages with clear prompts and help screens. 386MAX detected that I was using MSdos 5 and Windows and made the appropriate changes to CONFIG.SYS and AUTOEXEC.BAT.

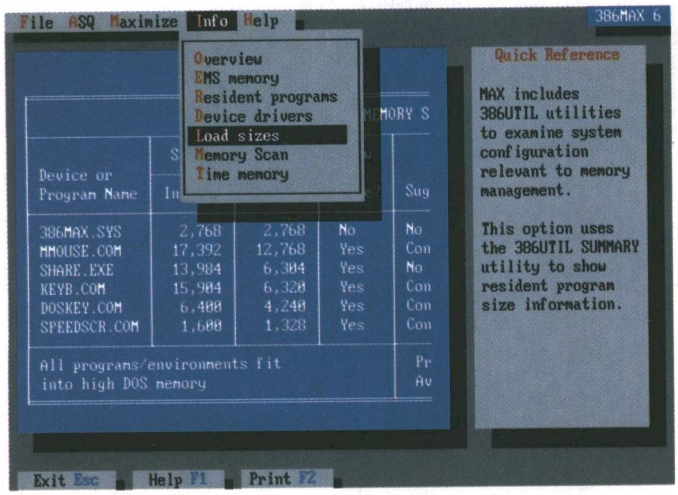



It took out HIMEM and EMM386, and replaced it with its own memory manager. Out also went LOADHIGH and INSTALL because 386MAX has better utilities.

It scans high memory between 640k and the 1Mb limit to find any free areas. These are then grouped together and used to load device drivers and TSRs.

It provided 160k of upper memory for this purpose and slotted in SHARE, DOSKEY, a mouse driver and a TSR utility with ease. 386MAX – replacing HIMEM and EMM386 – takes up just 1k of memory.

This is a high quality piece of software that stands out from the crowd with its impressive presentation and good compatibility – it works with MSdos 5 and Windows 3.0.




❑ ***386MAX is a high quality, menu-driven utility that features automatic installation and optimisation***

### PROFILE

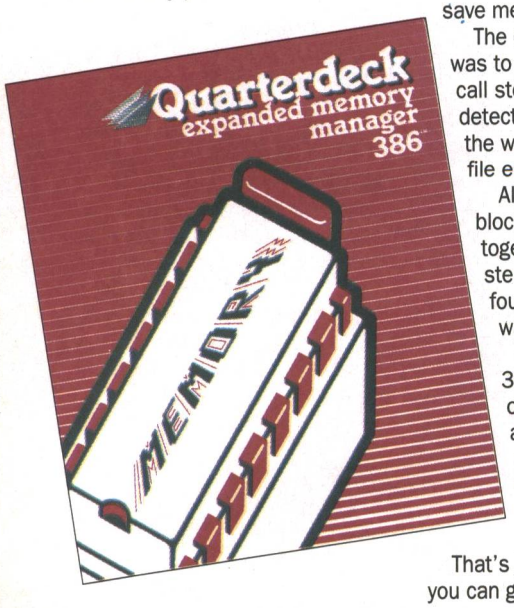
**Product: 386MAX**
**Price: £69**
**Supplier: Softsel, Softsel house, 941 Great West Road, Brentford, Middlesex TW8 9DD**
**Tel: 081-568 8866**

## Qemm-386 v6: Easy to use and very powerful

IN many ways, Qemm-386 – Quarterdeck extended memory manager – is like 386MAX. It is a user friendly, menu driven utility that performs extremely well and is highly compatible with current PC applications running under Dos and Windows 3.0.

It's a software-only solution to the memory problem and is designed for use with 386 and 486 PCs with extended memory.

The installation routine is fully automatic and uses helpful explanations, mouse control and attractive windows. It includes an optimisation stage which goes through your AUTOEXEC.BAT and CONFIG.SYS files with a fine toothcomb looking for ways to save memory.




The only work I had to do was to add what Quarterdeck call stealth – the ability to detect and move roms out of the way – to the CONFIG.SYS file entry for QEMM.SYS.

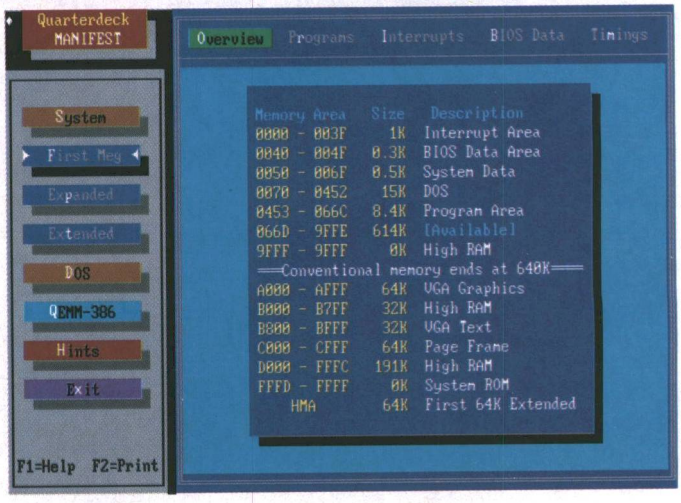
All the upper memory blocks are collected together and by using stealth extra memory is found where it was previously hidden.

After optimising my 386SX there was 620k of base memory and about 200k of upper memory available into which TSRs and device drivers had been loaded.

That's just about as good as you can get. Manifest is Quarterdeck's menu-driven utility for examining lower, upper, expanded and extended memory.

It displays in detail what hardware you've got, the Dos version you're running and how programs are using the ram.

It's excellent. Like 386MAX, this is a superb piece of software recommended for all 32-bit systems.




❑ ***Manifest is Quarterdeck's utility for examining the way the PC uses its memory***

### PROFILE

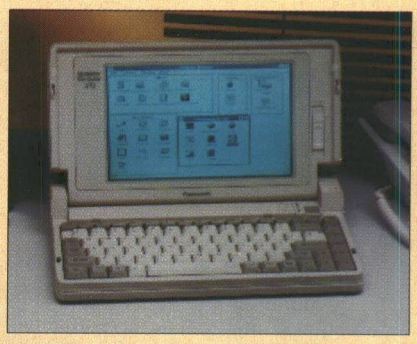
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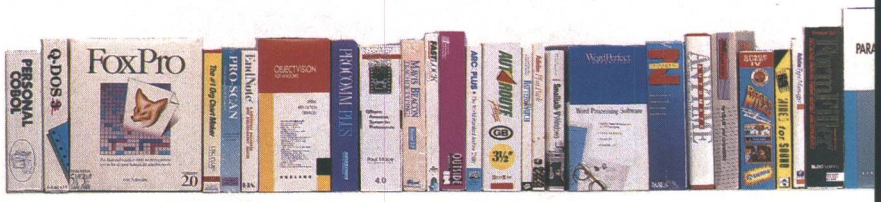
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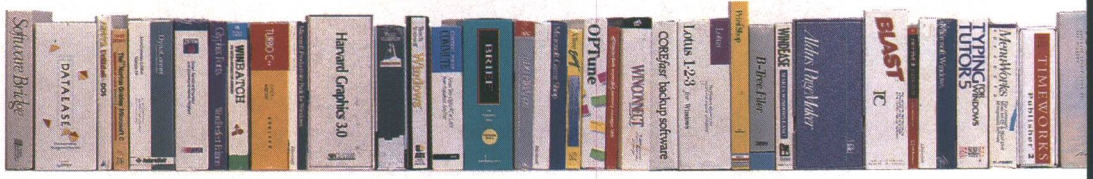
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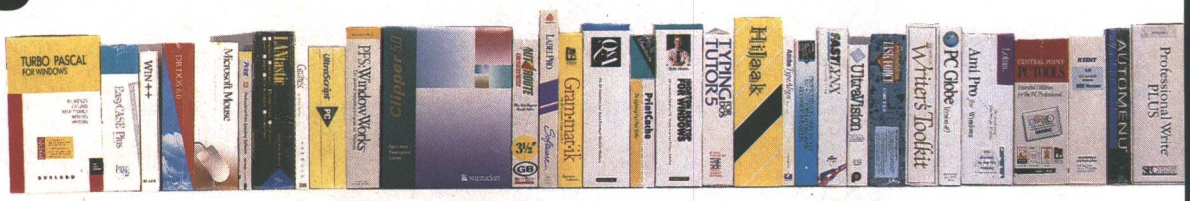






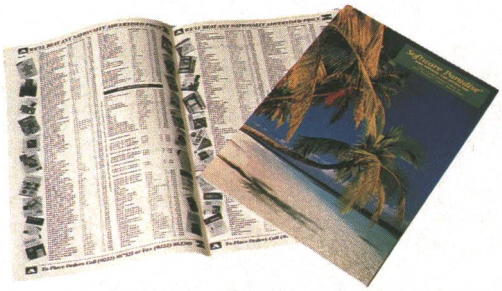


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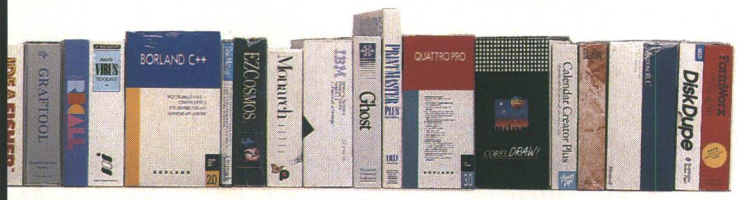
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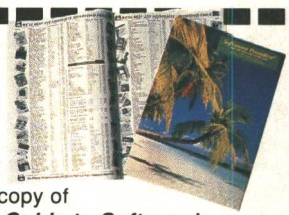
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Good quality artwork can dramatically improve your desktop published pages, documents and reports, and the impact of presentations to the board or potential customers.

Plenty of clip art is available, but do you find that it never seems quite suitable for the publication or presentation you have in mind? The solution is to create your own graphic images.

However, until recently Windows drawing packages had recommended price tags that started just under £400 and went to well over £500. This meant that lots of people who could benefit from using software of this type simply could not afford it.

The three programs reviewed here, however, are priced at just below £150 which puts them easily within the reach of most users.

These budget drawing packages are aimed at a new market of occasional graphics users who are distinguished from professional users by having an interest in art work that is incidental rather than central.

The programs are therefore intended to be easy to use for those of us who are neither artists nor draughtsmen, but who nevertheless have a need to include graphics in reports, presentations, sales or educational material.

When you discover a product that sells for a third of the typical cost of its competitors, the first question you have to ask is – what has been left out and can I do without it? Two of these products are cut-down versions of existing packages, with some features deliberately omitted in an attempt to make them easier to use, but also to safeguard the sales of the full-featured relatives made by the same manufacturers.

Once the cut-down versions have convinced users that they want graphics and can make use of this type of software some will find they want to upgrade to more powerful products to get all the extra features they need.

While this scenario holds in the case of Windows Draw! and Arts and Letters Apprentice, it is not true in the case of DesignWorks, which is a completely new product without ties to any other.

This was included not by being virtue of a cut down package, but simply because it fell into the same budget price bracket as the other two.

## Windows Draw!: Well designed and easy-to-use interface

MICROGRAFX Windows Draw! is a replacement for Draw Plus and provides an upgrade route for existing users of this product. It is also a cut-down package developed from its bigger brother, Micrografx Designer, aimed at the professional illustrator.

Although based on the same graphics engine as Designer with all its drawing tools, it has a completely redesigned interface which I found much easier to use.

### The toolbox

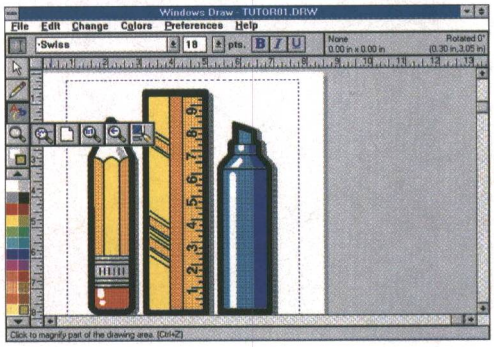
A simplified toolbox has just five icons at the left of the screen, three of which are coupled with a ribbon bar just below the menu.

So clicking on the Draw tool – the pencil icon – gives you buttons for each of the standard drawing facilities – line, rectangle, rounded rectangle, ellipse, curve, polyline, arc and freehand. A tool which I have not encountered, apart from in Micrografx Designer, is the Pie tool, which can be used to create circles divided into wedges of the size you require.

When you select this it first draws a circle. You can then point to the start of the first segment and drag the pointer to its end point. You repeat this to divide the pie into the number of segments you require and click the mouse to conclude the operation.

The final two icons displayed on the ribbon when the Draw tool is selected are the Fill Style and Line Style buttons. Windows Draw! offers a wealth of options for both fills and lines.

When selecting a fill you can choose between Solid, which simply uses the current fill colour, or use a pattern, which involves a dialogue box. The first of the three types of pattern is Hatch, which offers a further six patterns.



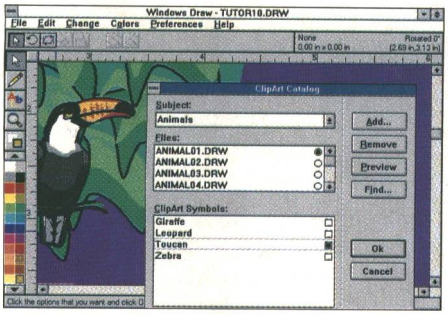

❑ ***Windows Draw! has an easy-to-use interface. The Ribbon area contains information relating to the text tool***

The Bitmap fill has a number of predefined patterns, but it also allows you to create your own using an editor to set each pixel to black or white.

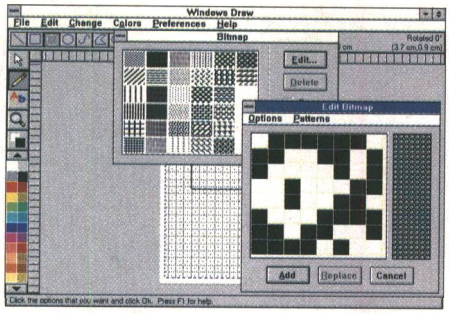
The Gradient fill includes linear, radial and square gradients and allows you to edit any of these. Line options enable you to change the style and width, and the ends of all open-ended lines. End styles include arrowheads, lines, squares, triangles and circles. The default is none.

When the Text tool is selected the ribbon bar has a display similar to that in many windows wordprocessors, with buttons for bold, italic and underline.

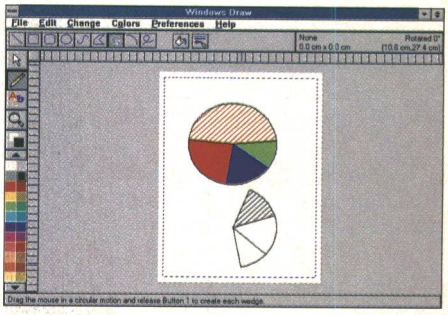
A Font list box at the left gives




❑ ***In Windows Draw! clip art can be retrieved by subject and by filename. You can specify an inexact match to recall images***




❑ ***You can use any bitmap as a fill pattern. To create a pattern, edit an existing one and change pixels to black or white***




❑ ***The Pie tool in Windows Draw! can be used to create a pie chart or any object that is made up of circular wedges***

access not only to the normal Windows fonts, but also to a selection that Windows Draw! supplies – Courier, Dutch, Swiss, Century Schoolbook, URW Symbol PS (a Greek font), and Vivaldi (a decorative script font). It also lets you set the size of the font.

## Direct text entry

ONE of the nice features of Windows Draw! is that when the font size is large enough you can enter text directly into your drawing. If the size does not permit this mode of working, a window appears for you to type into.

Another welcome feature when working with text is that the program has a Paragraph command which lets you set a left and right margin, an indent, and word wrap on or off.

The justification command has the options Left, Centre and Right. Using the Change menu you can also convert text to a Bezier symbol that can then be treated like any other symbol and used to fit text to a curve.

The Pointer tool gives access to the program's main manipulation facilities. While it is selected the ribbon area includes buttons that let you rotate and slant objects, change an object's shape using Reshape Points or Reshape Bezier, and Smooth or Unsmooth an object.

The final two icons in the list have associated pop-out buttons. The View tool has five options – zoom to a specified area of your drawing, full page view, view actual size, view previous (which lets you step back through the last 16 views), and a Redraw button that can be used to clean up the screen display.

Finally, the Colour tool changes the fill, line and background colours according to which of its three buttons you click. The colour palette is displayed directly below this icon and is in a scrolling box.

The colours included here depend entirely on the currently selected palette which you can edit and save as a customised one.

## Clip art

WINDOWS Draw is supplied with 2,600 clip art images that can be recalled by subject and by name, which is preferable to the usual procedure of referring to them by number.

You do not need to know the exact symbol name as you can search for images using the Partial Match option. You can add files to an existing subject or add new subjects to the catalogue so that you can easily organise any extra images added to the clip art collection.

Windows Draw has excellent online help and good reference section in its manual. Seventeen mini-tutorials, each on a different topic, serve as a good introduction to the program's main features, and three more extensive task-based tutorials combine various techniques.

The three activities are to create a logo, a display advert and a confirmation note – which is an invitation to an event giving a map, folded like a notelet with printing on four pages. All these are well thought out exercises that cover most of the techniques you will want to use.

# Arts and Letters Apprentice: Dependent on clip art

ARTS and Letters Apprentice is a cut-down package that is very similar to the larger program on which it is based. In particular, it shares the user interface with Arts and Letters itself.

This, of course, makes it very easy for a user to graduate to the larger package, but I can't say I prefer this interface to the others reviewed here.

## Confusing interface

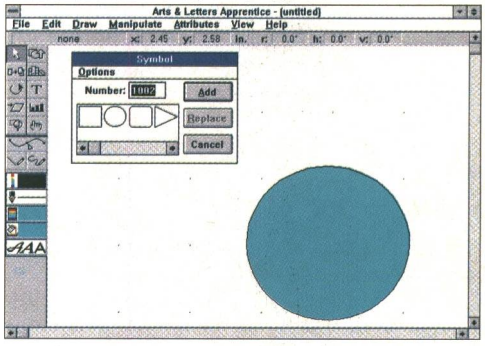
ALTHOUGH it doesn't look as cluttered as the one in the full package (by virtue of omitting some of the tools) I still found its organisation confusing.

When you look at the Arts and Letters Toolbox the thing that strikes you first is that it lacks the usual tools for drawing rectangles, ellipses and so on. This is because it is based on the use of clip art – even for simple shapes. The reason for this strange approach is because the package was developed from a clip art library and the editor was added to maintain the library rather than doing things the other way round.

So if you want to draw a circle you click on the Add/Replace Symbol tool – or choose Symbol from the Draw menu. A dialogue box then appears and you either scroll through the display to find the circle – luckily it is only the second item in the library, just after the square – or type in its number, 1002.

You then use the Add Object Cursor to determine the size and position of the bounding box. To draw an ellipse you draw a circle and then stretch it.

Supplied with this package is a range of fonts. They have unfamiliar names, but pressing the Preview button allows you to see them at the bottom of the dialogue box.




❑ ***ClipArt is central to Arts and Letters Apprentice and even tasks such as drawing a circle are done by adding a symbol to a file***

You can give names to combinations of type faces and point sizes which makes them available in the Styles box when you select the Type option.

You can also name fills and lines using the appropriate sections of the Attributes menu, and can then create Styles that combine all these attributes by selecting the combination you require and giving it a meaningful name.

So once you have settled on a style for a headline you can name and retrieve it by selecting it from the Styles list.

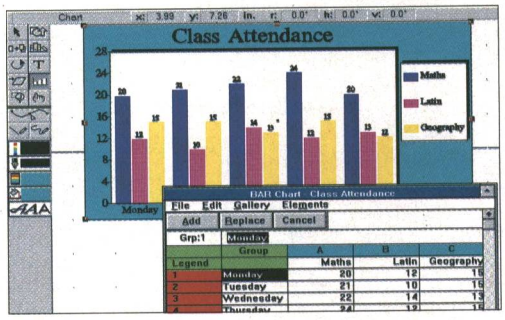
In addition to Current Page, Actual Size and Zoom In views, you can view all the pages of your

➤

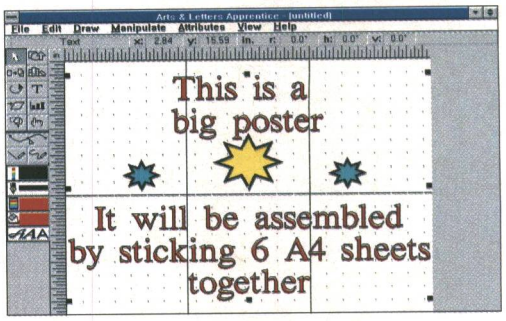
document. This can be very useful if the publication you are working on spans a number of pages.

For example, if you wanted to produce a large poster by pasting A4 sheets together you can see the whole picture on the screen and can therefore work on it very easily.

One of the features of Arts and Letters that has also been included in the Apprentice version is its charting facilities. When you click on the Charting tool you are presented with the Chart Window into which you type your data and labels.




❑ ***There is a full chart drawing facility included in Arts and Letters Apprentice which is used by filling in a spreadsheet-like form***




❑ ***You can see all the pages of your file at once in Apprentice. This makes it easy to work on a multipage document such as a big poster***

## Chart labels

THE labels you type in the top row are used as legends and those in the leftmost column are the points along the x-axis.

You add x and y-axis labels in the Titles dialogue box displayed when you select Titles in the Chart Elements menu. This menu also lets you turn on or off the legend, the data values, the background, the backdrop and the backdrop shadow.

The Attributes section of the menu enables you to change the background colour and fill, the lines colour and style, and the text colour and font. In the y-axis Scale section of the menu you can specify the minimum and maximum point on the y-axis, but not the step value.

The main limitation with this facility is that it has only a 5 by 12 data matrix and has just five chart types in its gallery – area, bar, line, pie and point.

Unlike the corresponding facility in the full Arts and Letters, it does not allow you to use other symbols in charts to produce pictograms.

Crucial to the use of Arts and Letters is its ClipArt Library and the one included in Apprentice has about 3,000 images compared to 5,000 in the full program.

Other features omitted include a special Warp tool, and blend and merge facilities. It also lacks colour separations.

This package has limited online help in that it has no facility to search for a topic by keyword and while its documentation is clear it is thin on content.

The Mini Lessons are helpful for understanding techniques and a hands-on session covers creating a chart, adding symbols and text, drawing lines and changing attributes – the result is an effective handout or notice.

### Which PC?

**THE hardware requirements for all three of these packages is identical. They run on a 286 PC with 2Mb of ram, a hard disk and Windows. However, they will run better on a 386SX with 2 or 4Mb.**

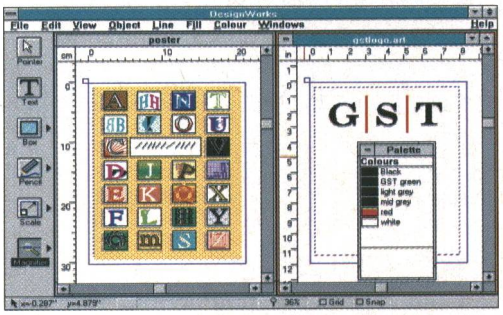
**You can theoretically do without a pointing device like a mouse or trackball, but in practice it would be difficult.**

**It is possible to work with a monochrome monitor. If you choose colour go for a minimum of VGA, or better still, Super VGA. A CGA monitor is totally unsuitable, but you could use EGA though I wouldn't recommend it.**

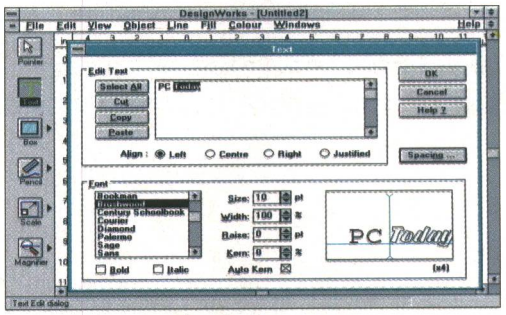
## DesignWorks: More advanced features

THIS package differs from the other two by virtue of not being cut down in any way. This gives it an immediate advantage of not having deliberately to drop features in order to protect another package from the same stable. So, not surprisingly, DesignWorks has more advanced features.

One of the most important is the ability to have more than one drawing file open at a time. This is very unusual and very welcome. You can cascade and tile windows which means you can look at one illustration while working on another, and copy and paste between them easily.




❑ ***DesignWorks lets you have more than one file open at the same time and you can use tiled windows to see more than one drawing at once***




❑ ***When you select the Text tool a dialogue box automatically appears. From this you can select automatic or manual kerning***

## Sparse interface

DESIGNWORKS has a relatively sparse interface – with only six icons appearing down the left of the display. However, with the exception of the pointer, this is just the top layer of the menu and clicking on the arrow to the right of each tool reveals another menu with more choices. If you select one of these tools it then replaces the one displayed in the box.

There is also an option to display the tools in a floating toolbox. This has the advantage of giving you a wider working area and the ability to see all the facilities at once. This box contains 16 tools, but no text descriptions as there are in the sidebar menu.

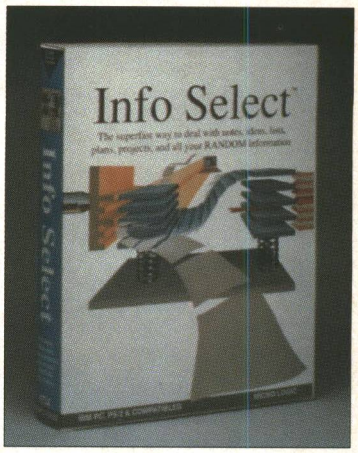
The tools available in the Shapes menu are Box, Round Box or Ellipse. To draw a square or a circle you use these tools in conjunction with the Control key – a common technique in drawing packages.

The Drawing menu contains Pencil, which can be used for freehand drawing or in conjunction with Control to draw straight lines that are at 45 degrees or at right angles to each other. Used with Shift the pencil produces straight lines at any angle.

The other tools on the menu are a Combination tool for Bezier curves, a Corner for connecting points with straight lines (using this with Control constrains the lines to 45 degree intervals to each other), a Curve for connecting points using curves and yet another Connect tool that

# YOU DON'T NEED THIS!

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Management consultant and first time PC user Rob Bridges told us "I found it a doddle to install and fantastic to use". A senior manager in Volvo writes "I have found the package to be extremely easy to learn and particularly useful in day to day work and home life".

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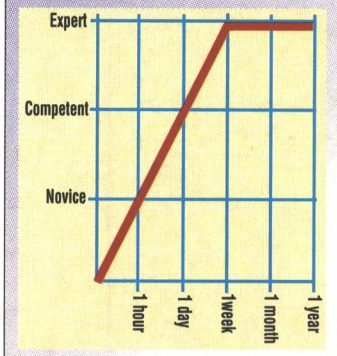
**Info Select** handles your information in a way which is already familiar. Stacks of paper. This means you are up and running in minutes and as it is optionally Memory Resident you can even use it when running another program. Your information is stored in individual windows which you can browse through, edit, search, select, form lists, mailings, at will. Tap in a few letters and all the notes containing that combination are presented instantly. Despite being able to hold up to 10 A4 pages (32K) in a note and 64,000 notes in a stack and have as many stacks as you like, you can run **Info Select** in as little as 7K RAM!

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## PC TODAY CHECKLIST

### PC TODAY PROFILE



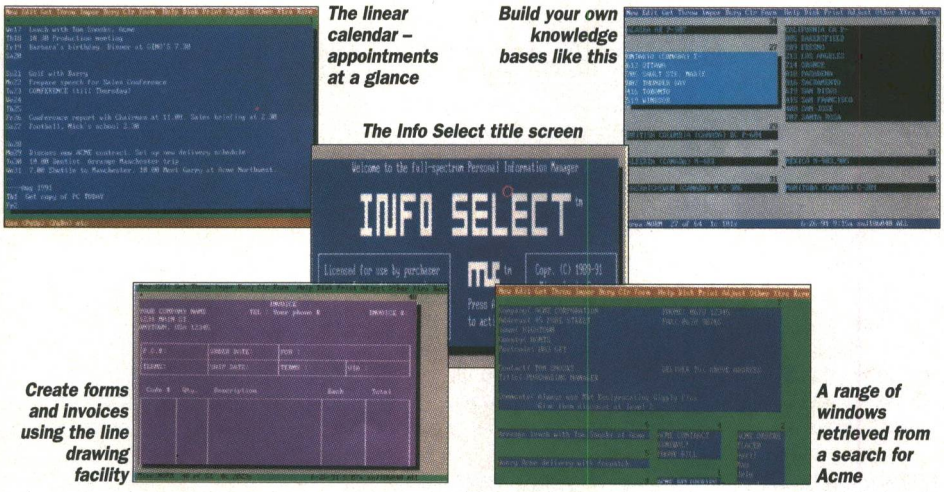

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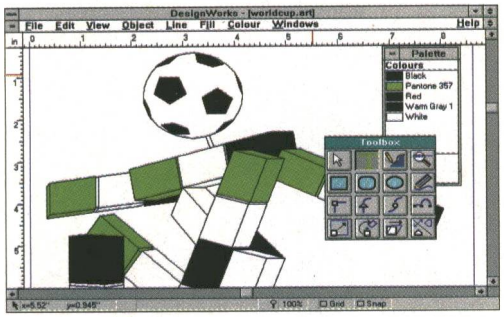
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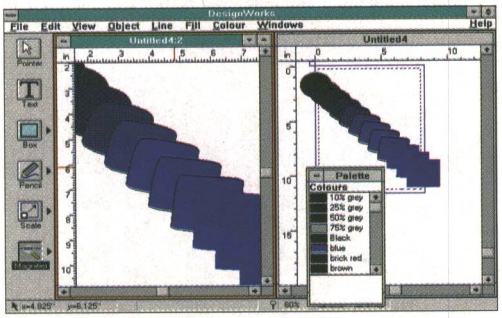
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❑ ***Rather than having the tool icons at the side of the screen you can opt for a floating toolbox that contains all 16***




❑ ***The Blend tool will blend both shape and colour. You can view the same file at more than one level of magnification***

## PROFILE

**Product: Arts and Letters Apprentice**
**Price: £145**
**Supplier: Roderick Manhattan, Cloisters Business Centre, 8 Battersea Park Road, London SW8 4AA**
**Tel: 071-978 1727**

**Product: DesignWorks**
**Price: £149**
**Supplier: GST Software Products, Meadow Lane, St. Ives, Cambridgeshire PE17 4LG**
**Tel: 0480 496666**

**Product: Windows Draw!**
**Price: £149**
**Supplier: Micrografx, Grafx House, Forsythe Rd, Woking, Surrey GU21 5RS**
**Tel: 0483 747526**

➤

is similar to the Corner, but places Bezier points on the screen.

The Transform menu contains four tools for manipulating objects – Scale, Rotate, Skew and Reflect. Finally the Other menu contains a Magnifier for zooming in on part of your drawing, and an Autotrace facility gets an outline from any imported bitmap file.

When you select the Text tool you automatically see a dialogue box that enables you to choose a type face and point size. DesignWorks give you the unusual ability to change the font of a single word, or even of a single letter. You can also change the height above the baseline of any individual letter.

The Text dialogue box also facilitates kerning (changing the distance between pairs of letters) and for tracking (changing the spaces between words).

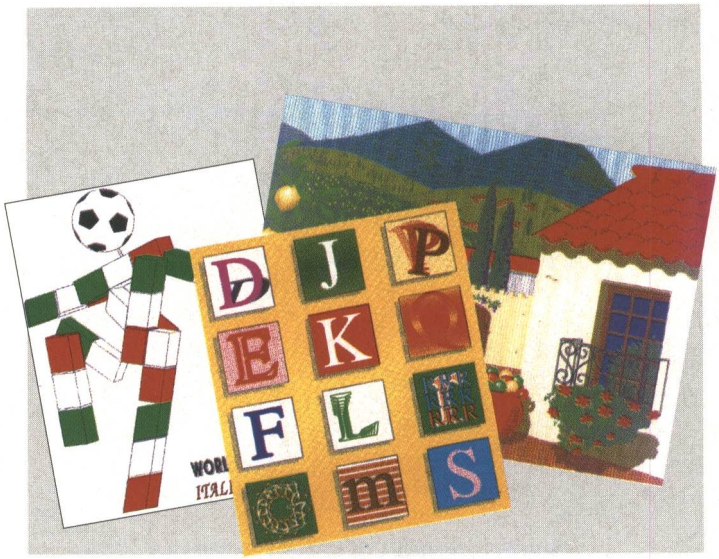
These facilities are not often included in drawing packages although they are to be found in DTP programs. This dialogue box also lets you set bold or italics, justified left, right or centre or fully justified. Word wrap is automatic.

DesignWorks provides a great deal of flexibility with colour and line style. You can edit, create and name line styles and do the same with colours. Its range of options for fills is particularly extensive.

In addition to linear, logarithmic, radial, spherical and postscript fills it offers a random and a cylindrical fill – ideal for colouring and highlighting rounded surfaces.

You can also name fills and a floating palette gives a list of current colour, fill and line styles – you cycle through these by clicking on the title bar.

The Align command uses a dialogue box which gives you the horizontal options Left, Centre, Right and Off and the Vertical options Top, Middle, Bottom and Off. Symbols on the screen show you the effect of your choices.



Also in the same menu there is an Info command which both gives information about the location of objects (including text) and provides a means of making exact changes to their positions.

It also includes the commands Lock and Unlock which let you lock objects to avoid changing them and unlock them when you do need to change them, and Hide which lets you remove objects from view so that you can see what you are doing.

## Snapshots

ANOTHER extra in DesignWorks is a Snapshot program which lets you capture a screen as a .TIF or .PCX file directly.

This is obviously useful for anybody wanting to prepare training manuals or course notes relating to any computer program. DesignWorks also includes layers, which means that you can prepare a complex drawing by working on the background and then on the foreground separately. You can divide your image up into as many layers as required.

More importantly, perhaps, the package supports colour separation both for spot colour and for full process. DesignWorks also has a range of special effects including fitting text to a curve and a blend tool.

The version of DesignWorks supplied for review was a beta and the manual was still in preparation with only a sample available – which seemed both clearly written and comprehensive.

Similarly, only part of the online help was complete – with many commands and facilities still waiting to be documented.

## Horses for courses

**SO which budget drawing package would I recommend? As each of these programs contains a different mix of features the choice has to depend on exactly what you want to do.**

**For example, if you want to include charts in your output Arts and Letters Apprentice offers this facility without the need to include material created in another package.**

**Another consideration has to be which formats you want to work with. DesignWorks is noteworthy by being able to import .GEM files while Windows Draw has a filter to work with PageMaker 4.**

**Of the three programs, I found Windows Draw! the easiest to use by virtue of its extensive help and its well designed interface.**

**However, with a view to being able to prepare colour artwork for printing by traditional methods my choice would have to be DesignWorks. It is the only package that supports colour separation and gives you a straightforward method of including spot colour in printed output.**

**This program also comes out top of the selection for speed and is ahead of either of the other two budget packages in terms of features.**

**Indeed, in my opinion it would still come out among the front runners even when you extend the competition to full cost packages.**

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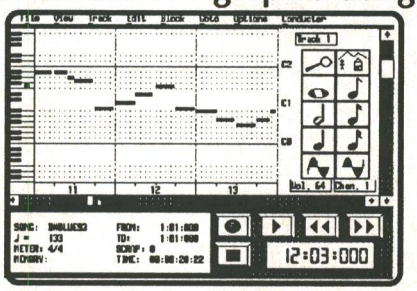
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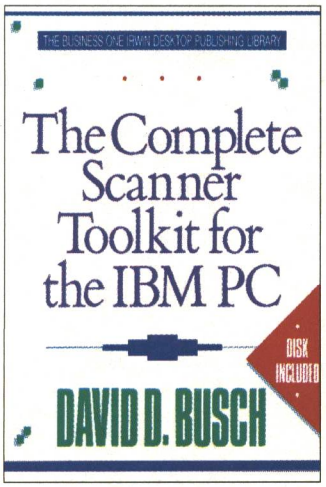
# READ ONLY MANUALS

## Our resident bookworms turn over a new leaf on hardware and software reference guides

### New horizons – the complete scanner toolkit for the PC

DAVID D.Busch is an old hand in the world of scanners, having worked with them since 1975. His book *The Complete Scanner Toolkit for the IBM PC* concentrates on utilising your hardware to the best of your ability, be it handheld or flatbed, and includes a disk of shareware to help you take advantage of what you've learned in this 500-page guide.

Busch's sense of humour is obvious throughout. He begins a chapter on how a scanner works by stating: "you don't need to know how a scanner works to use one". Throughout, Busch explains




complex aspects of these gadgets in a clear and unpatronising way, whatever your level of understanding.

The writer does not try to describe as many scanners as possible, but concentrates on aspects such as memory usage, what vendors don't tell you about installation and how to compile your own clip art and photo library.

Scanning is a particularly easy subject to illustrate and in this guide there are numerous examples of images at various stages of manipulation. There are detailed chapters on optical character recognition and an in-depth look at how to deal with colour.

Trying to scan colour slides provides professionals with difficulties. Busch explains how to get the best results with slides using ordinary scanning facilities and some simple techniques.

One drawback of the book is that when dealing with scanning in different environments Busch gives as much attention to O/S 2 and DESQview as he does to Windows.

However, that shouldn't take away from a book that is enthusiastic and knowledgeable about its subject, well written and illustrated and supported by an in-depth glossary.

**Matthew McGrath**

**The Complete Scanner Toolkit for the IBM PC**
**Author: David D. Busch**
**Price: £25.99**
**Supplier: Letts of London House, Parkgate Road, London**
**Tel: 071-407 8891**

### Hands-on guide as easy as 1-2-3

THERE have been many guides to Lotus 1-2-3 over the past 10 years so it must be difficult to come up with an original idea. But K. Cuneo and G. Bond, the two authors of *Lotus 1-2-3 Release 2.2 Quick Reference Handbook*, have made a reasonable attempt.

It's not the sort of book you can sit down and read – it's one that is best used as you sit at your PC with the program already up and running. As the title suggests, this is a reference guide, so if you want to know how to use the various format commands, enter labels, access built-in functions and so on, you'll find help here.

You won't see long technical explanations of the workings of spreadsheets, but just simple hands-on guides to performing all the tasks you might need to know when you're at work.

Most of the text is taken up with step-by-step instructions, like "1. Press the Slash key. 2. Type A to select Add-in. 3. Type D to select Detach." This makes it a useful tome to keep at hand.

There's nothing here that isn't in the 1-2-3 manuals, but you may find it more easily accessible.

**Roland Waddilove**

**Lotus 1-2-3 Release 2.2 Quick Reference Handbook**
**Author: K. Cuneo and G. Bond**
**Price: £21.95**
**Supplier: John Wiley & Sons, Baffins Lane, Chichester, West Sussex PO19 1UD**
**Tel: 0243 779777**

### A brief history of the PC compatible

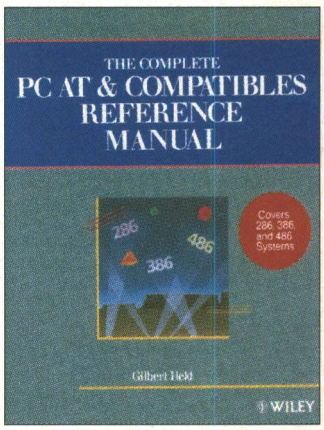
THE lengthy title of *The Complete PC AT and Compatibles Reference Manual* is a good description of this marvellous book by American author Gilbert Held. It covers every conceivable topic from the history of the Intel 80286-based IBM PC AT to the various forms of Basic.

This is a book that I wish I had access to several years ago, as it is the ideal companion to a first computer. The background information on the PC's development helps to clarify why certain things happen in a particular way.

There is a section on hardware that explains in easy-to-follow terms and diagrams the internal layout of the equipment and the function of various components.

Being American, examples of hardware are limited to popular US brands – especially those that assisted the author with the loan of equipment.

Over a third of the book is dedicated to Dos, giving detailed information on the commands and facilities. The two sections devoted to creating batch files and




programming in Basic are particularly useful as they provide practical examples as well as an explanation of why they work.

This is the sort of book that computer suppliers should consider bundling as part of a complete package. It contains just the right amount of information to turn a novice into a competent user.

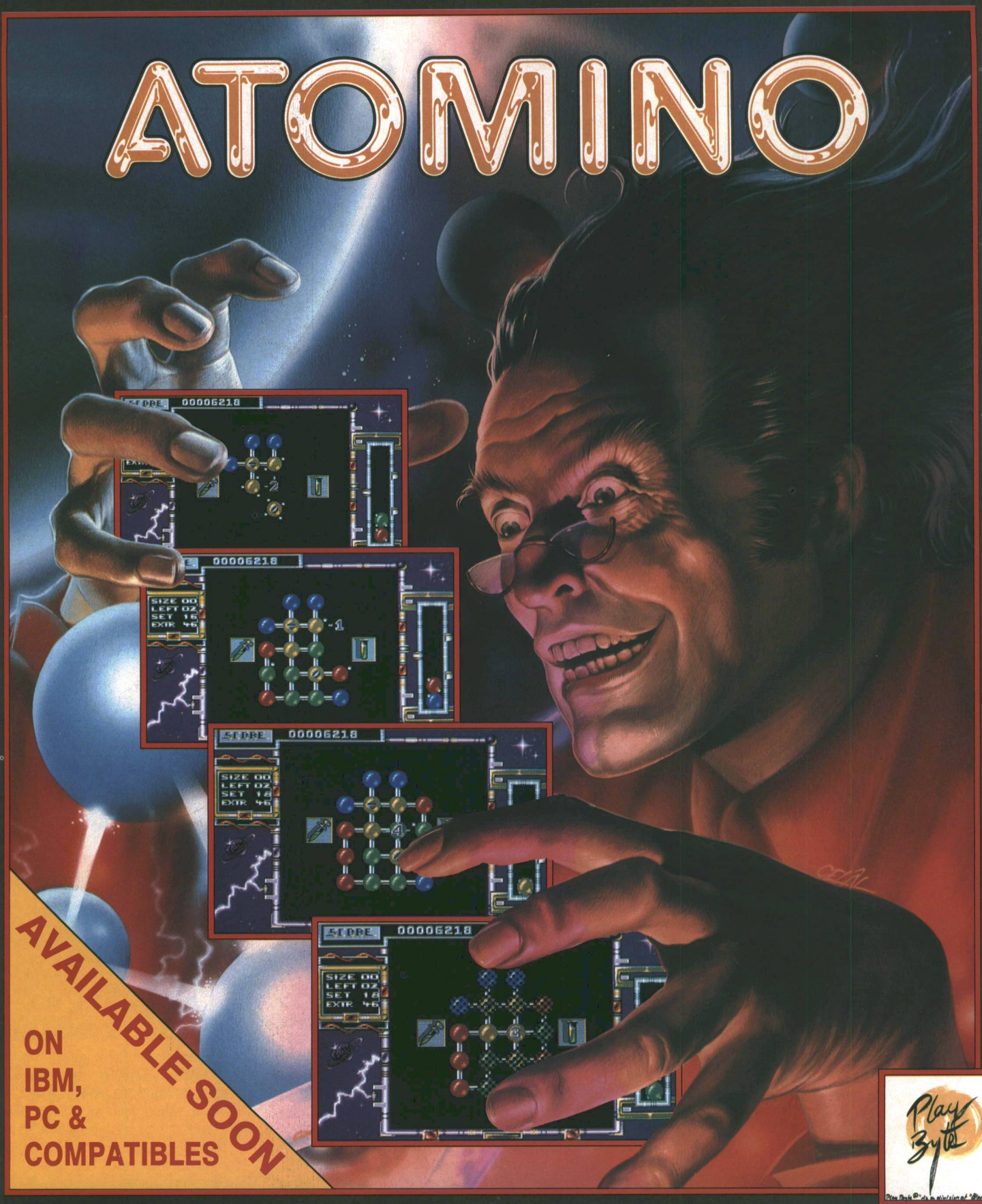
**Ged Start**

**The Complete PC AT and Compatibles Reference Manual**
**Author: Gilbert Held**
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❑ ***The top 10 best selling books for March, compiled by L.J. Supportware***

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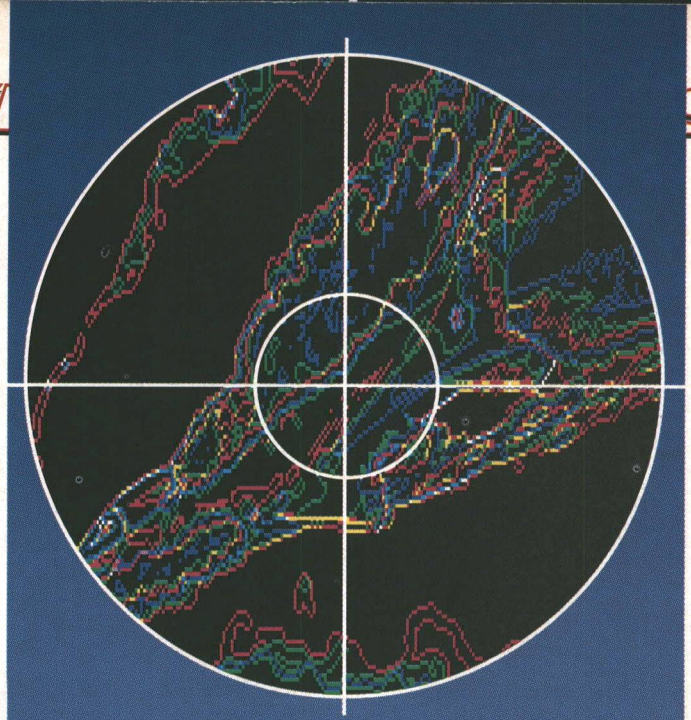
And don't be surprised if the very atom you *don't* need will be the one you're given to use next . . . Pray for a Joker Atom!

If you don't look like a mad scientist now, you will by the time you've tackled **ATOMINO!**

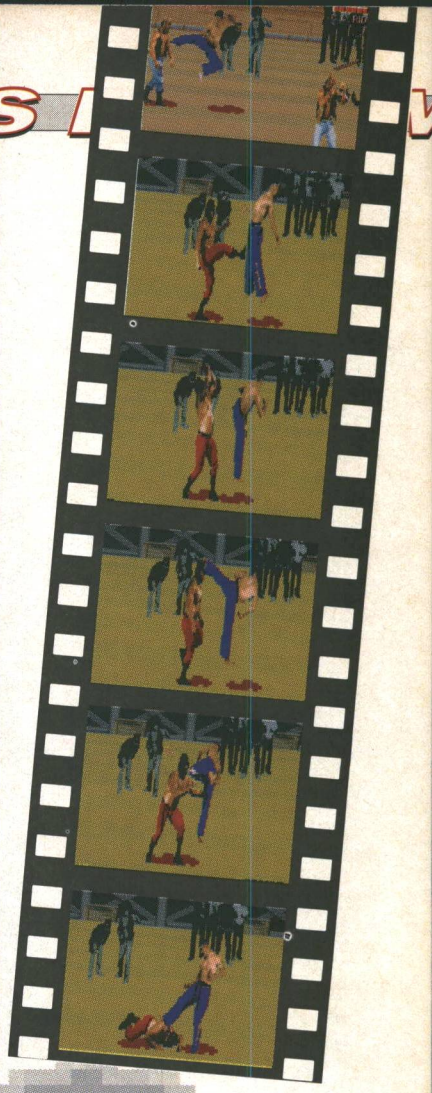
***Up and Atom!***

*Screen Shots from the Amiga Version*

PSYGNOSIS



# AFTER HOURS



**Sue McCarthy spends April Fool's day in the Middle Ages, Matthew McGrath gets in a huddle and Tom Johnson comes out fighting in this month's selection of games**

❑ *The martial arts action is fast and furious*

## Pit Fighter: Arcade mayhem

THE first incarnation of Pit-Fighter that I came across was a full sized arcade machine in a pub in East London. It was an exceptionally brutal game with bare knuckle fighters competing in an arena without any rules.

With those that liked their entertainment violent the machine was doing great business.

I have to confess that I did try it, though I found it expensive to play as none of my characters seemed to last more than 30 seconds. The action was fast and furious, though the controls were a mystery.

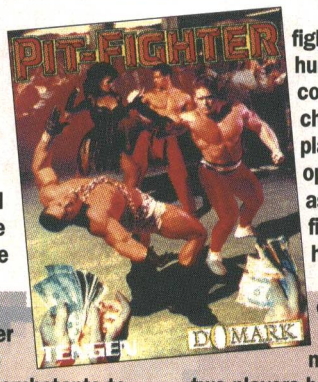
As with all successful arcade games, the transition to home computer has not taken long. The manual had control instructions for every conceivable format except the PC.

This made playing for the first time interesting to say the least. I can only assume that when the game is on general release this will have been corrected.

The game is a mixed bag featuring some excellent ideas and some atrocious ones. Playing involves selecting a fighter from a choice of three: Buzz, an ex-professional wrestler, Ty, the kick boxing champion and Kato, a black belt Karate expert. The fighter's aim is to win the world title held by the awesome Ultimate Warrior.

To reach the championship you must first win a series of elimination bouts against a selection of psychotic misfits with descriptive names like The Executioner and Chainman Eddie.

In each bout you have to make the most of your special skills – and the knives, bars, barrels, motorcycles and so on that are scattered around the arena – in order to defeat the opponent. And a technique that is effective against one may not work against another.




Once the curious controls have been mastered the games interest wanes rapidly and the fights become routine and a little dull.

On the positive side the two-player option adds spice by allowing four combatants to fight at once: Two human and two computer controlled characters. If one player defeats his opponent he can assist the other or fight against him as he chooses.

After every two elimination bouts there is a grudge match where the two players have to fight against each other for a bonus payout. Only one player can reach the championship, so the final grudge match is for the privilege of fighting the Ultimate Warrior.

The graphics use scanned in images of real fighters to create a realistic scenario, which works to a point. In releasing the PC version the manufacturers have gone for the lowest common denominator in making sure that it will work with old specification machines.

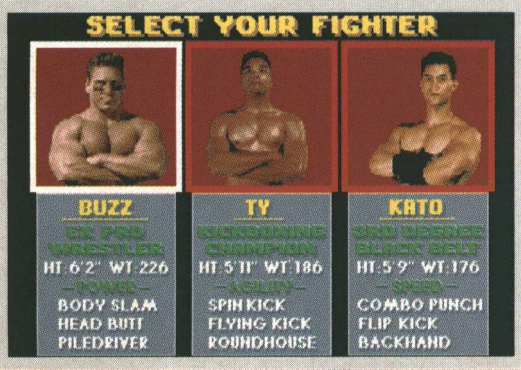
There is nothing wrong with catering to this market, except that they have stopped there and not offered higher resolution graphics to those with newer machines.

The large pixels used create horrendous jagged edges that should be smoothed out. Considering the price tag, offering a choice of resolutions could have been possible.

Many people will avoid this game on moral grounds – getting bonus points for kicking your opponent while he's down is pretty tasteless. Others will accept it as a bit of harmless fun that provides the opportunity to release aggression quickly and painlessly.

I am one of the latter, but I would have liked the game a lot more if the graphics offered more detail instead of some of the confused images that came out.

Tom Johnson

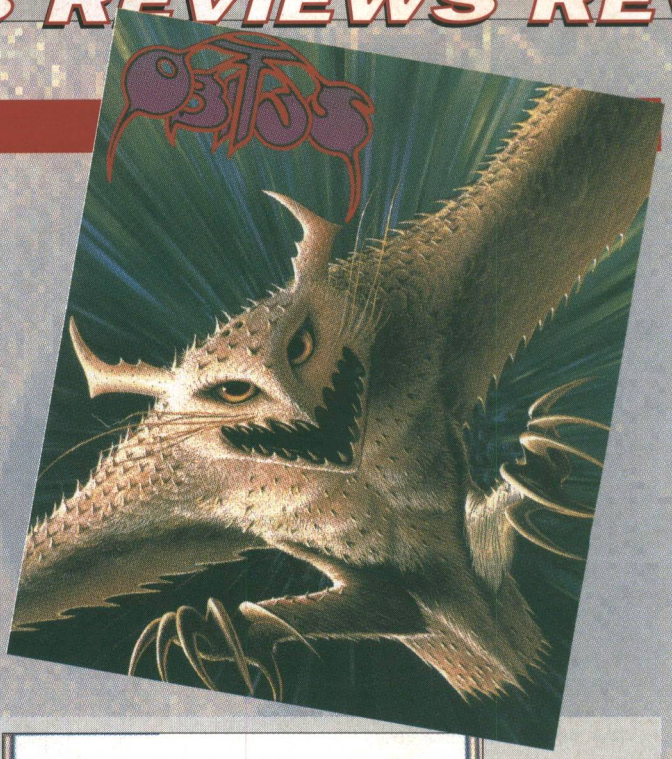



❑ *Picking a fighter is a tough choice from these hard men*

## PROFILE

**Product:** Pitfighter
**Price:** £29.99
**Supplier:** Domark, Ferry House, 51-57 Lacy Road, Putney, London SW15 1PR
**Tel:** 081-780 2222

## Obitus: A walk on the wild side




IN this latest offering from Psygnosis you take the role of Wil Mason in a game of adventure and arcade sequences. Obitus is set in medieval Middlemere and the date is 1st April 1190.

You begin by selecting the graphics mode suitable to your machine and then your desired input device. I used a mouse but a keyboard or a joystick is just as effective. Sections of the game will require the use of the keyboard whatever device is used.

The main play area takes up the top two thirds of the screen with the lower third consisting of an information bar. On the far left of this is a vertical sliding scale indicating your state of health.

There are nine command icons to control eating, sleeping and talking. You can also pick up objects and use them, drop items which you have tired of carrying and pause for a quick cup of coffee.

The remaining icons are info, which gives you a full profile of an object in your inventory and disk, allowing you to save your game either to floppy or hard disk.

In the middle of the information bar is the compass which proves very handy in the various mazes you will find yourself wandering through. The icon in the centre of the compass shows you and the directions you are taking.

The eight points shown on the compass correspond with the number of possible routes. Clicking on west or east will turn you round, either anti-clockwise or clockwise, to face each direction in turn. The available exits will appear as dark holes.

It is advisable to make a note of the directions you take so that you don't go round and round in circles. As you select a direction and move forward into it, the darkness will move ahead until you come to another junction or your way ahead is blocked.

To the right of the compass is the inventory window showing the last item to be used or picked up. Details on the nutritional content, the weight of the item, the value in points and the amount of similar items you have collected are shown when you click on the info icon.

There is another vertical scroll bar next to the inventory window that shows, in turn, the items you have picked up. The final item on the bar is a disk prompt and additional information on the inventory objects.

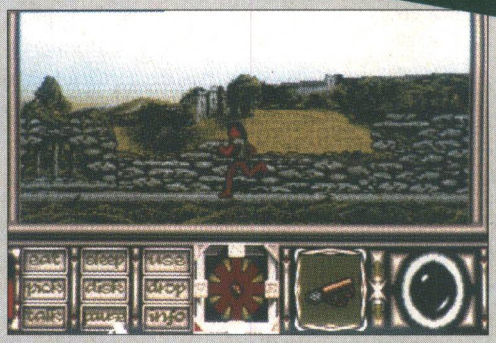
You start in a circular room with four doors and all are locked. As you move around the scenery changes, just as if you were standing on the spot and rotating yourself.

There are several mazes to negotiate including mines, castles, dungeons, castles and woods. It can be difficult to find your way without going round in circles.

The arcade sequences show you progressing along a path fraught with dangers. As arrows fly and heavy weights are thrown from trees you must avoid injury by jumping and crouching as you go.

The keyboard is used during these arcade sections. You can only run left or right across the screen. Using the Q, A, O and P keys you can crouch to avoid flying arrows, or execute an athletic leap, including a mid-air somersault, to deftly avoid a painful death.

You don't have to put up with continually avoiding your enemies, you can dish out your own punishments too. The A key and the spacebar will enable you to select your weapon then the spacebar on its own will fire it.




❑ *Wil needs your help to escape from ye olde worlde. Proceed with haste and caution*

The graphics are to a high standard with good attention to detail, especially the clothing and weapons. A few objects couldn't be recognised until picked up – items that looked like peas turned out to be apples.

A 41-page manual is needed for both passwords and an in-depth guide to Obitus. Although it seems voluminous at first, the instructions are well written and very easy to follow.

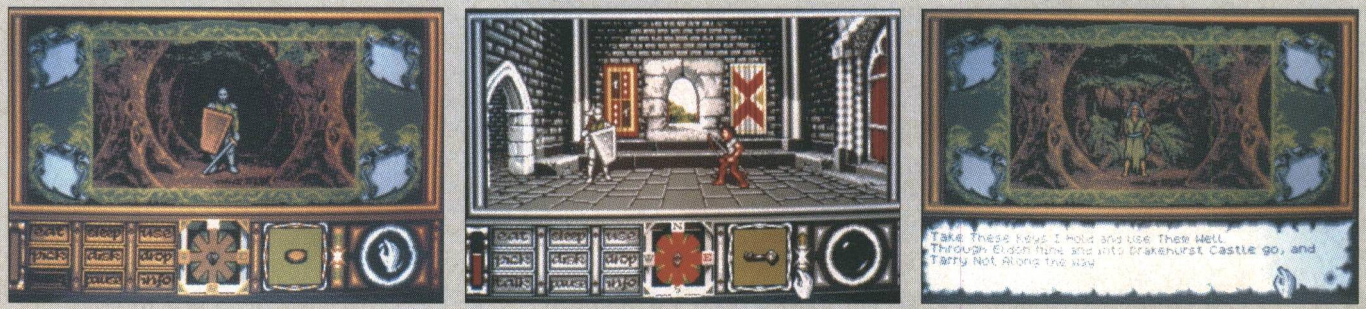
A few hints and tips are included just in case you should need them until you get more used to the ways of the Medieval world. There is even a map of Falconwood to help you get started on your journey.

Obitus is an exciting game. It takes a while to get to grips with, but after the first few stages you will find the appeal of the medieval fantasy growing on you.

Sue McCarthy

### PROFILE

**Product: Obitus**
**Price: £34.99**
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## Mike Ditka's Ultimate Football: In the big league

WITH the last pass barely thrown in the Superbowl, Mike Ditka's Ultimate Football from Accolade marks a timely arrival for all those already suffering pangs of withdrawal. Fear not, for if you've got the interest Ditka definitely provides the action.

One problem a lot of players may have is insufficient memory. This game needs at least 570k of ram free and the manual advises checking your free memory first and booting clean if need be.

Ultimate Football works by letting you select the type of game you want to play, the teams, players and game conditions. You can play single games, or try your hand at a regular 17 week season.

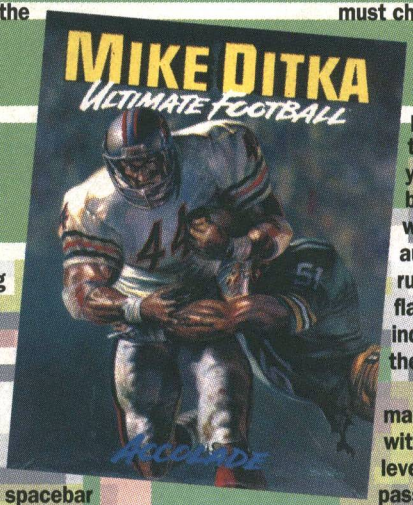
Control is through the keyboard, keypad, mouse or joysticks. This allows more than one player to partake although competition can get pretty fractious if one player is using the keyboard and the other the keypad but that's in keeping with the nature of the game.

If you don't fancy playing against someone you can take on Ditka –the computer. The game allows you to be coach, player or both. You can predetermine the players you'll use and whether or not they'll suffer the fatigue and injuries that afflict lesser mortals.

Once you've chosen teams and players the game begins with a coin toss. The players are animated and the referees appear as digitised images. Opting to receive means the opposition will kick to you and you must attempt to return the ball for the maximum yardage.

The kicking mechanism is clever and allows for a good deal of accuracy. Using the spacebar as control you are guided by a line on the left of the screen that determines distance and accuracy.

Pressing the spacebar sends the indicator up the line and pressing again stops it, hopefully at the distance you're trying to achieve. On the way down the line falls between arrows and a further press of the spacebar determines whether your aim is to the left, right or down the middle.




When attacking or defending you are given eight basic formations. You can have eight offensive plays for each formation while this is limited to four on defence.

You can set game speed and resolution to three levels and alter levels of play at any time. Probably the most important level to set correctly is passing.

The beginner's level allows you to stop the action as soon as the ball is hiked. You can then cycle through your receivers and throw at the target of your choice. Similarly with the intermediate level except that you immediately control the designated receiver when you throw the ball and it's up to you to guide him to the ball.

Advanced action is live. You must choose a receiver while you're dealing with a fierce pass rush, though when you throw the ball the receiver will automatically run to the flashing ring that indicates where the ball will be.

If you manage to cope with all previous levels of play and passing the Pro challenge awaits. This is live action with live pass rushing and you immediately control the receiver once the ball is thrown.

Defensive play has the man nearest the ball highlighted. Your options on defence are more limited than on attack although you can toggle the selected players and get an extra yard out of them when they're near the player in possession.

Ultimate Football mimics the real thing in almost every aspect. Perhaps more importantly it also mimics TV coverage without the necessity for advertising breaks.

Camera angle can be changed at any time and there's the opportunity for replays after each play. These can then be slowed down or speeded up to your preference. The game also includes timeouts, overtime and sudden death for playoff games.

That in itself would be enough for most games, but Ditka gives you that little bit extra that makes it special. It includes a league construction set so that you can create your own league with its own teams and players. You can also alter your playbook and design complex new plays known only to you.

American Football is a complex and tough game, but Ditka is well up to the challenge. Quibbles include the lack of clarity when catching a ball and the limited nature of defensive play. The sport itself specialises in moments of intense action and Mike Ditka's Ultimate Football catches these superbly.

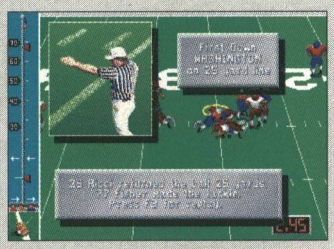
Matthew McGrath

### PROFILE

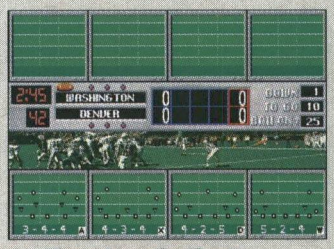
**Product: Mike Ditka's Ultimate Football**
**Price: £34.99**
**Supplier: Accolade UK, Bowling House, Point Pleasant, Wandsworth, London SW18 1PE**
**Tel: 081-877 0880**



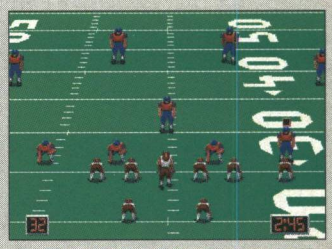
❑ *The computer takes control of the kickoff*



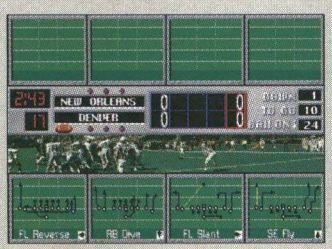
❑ *As soon as the action stops the referee steps in*




❑ *The plays indicate where your men will be*



❑ *The line of scrimmage is where the crunching starts*



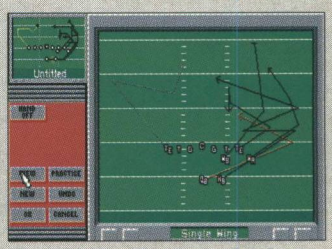

❑ *The primary receiver is marked out in yellow*



❑ *Once hiked the Quarter Back lines up his targets*



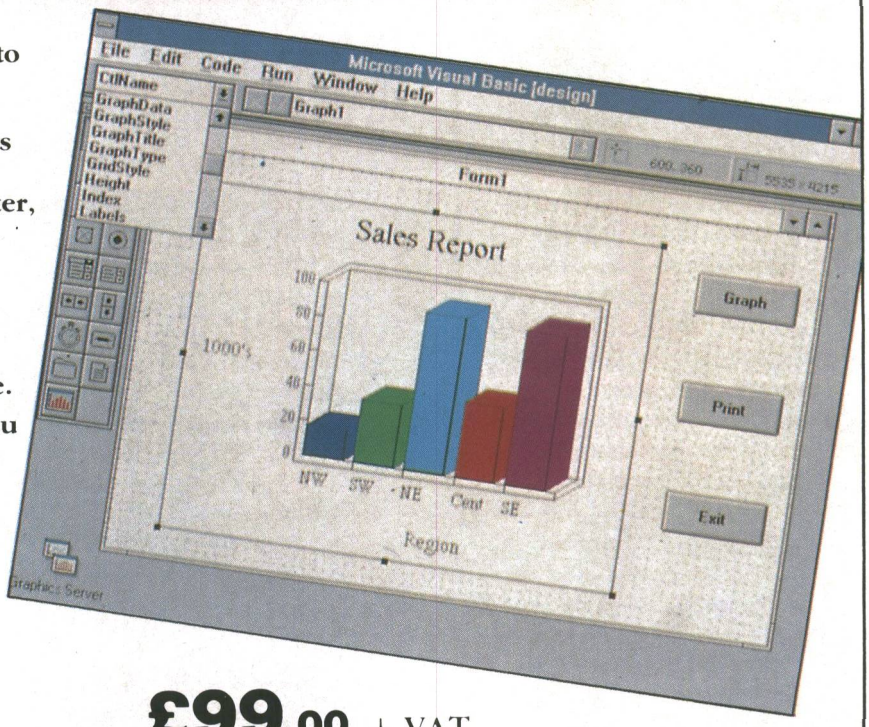
❑ *Kicking a field goal is easy to master*




❑ *Off the field designing plays provides a challenge*

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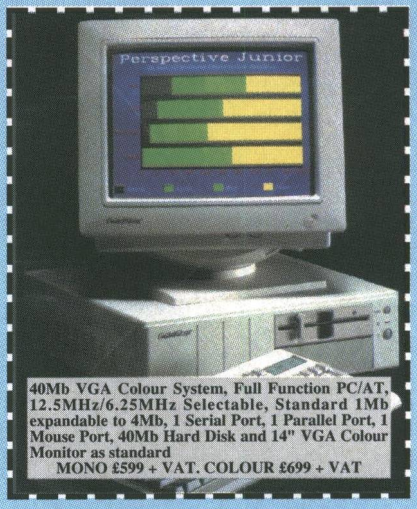
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## QuoteMaster: Automated quotation system

QUOTEMASTER Professional and Junior are for producing quotations for goods and services and not the literary kind. (Make sure that you distinguish them properly from the program of the same name from PennComp which will provide you with apt phrases for every occasion.)

This software is aimed at a variety of businesses – the building trade, consultants, service industries, the motor trade, in short any business that gives quotations before delivering goods or services.

The preparation of such quotes by manual methods can be a time consuming operation – requiring you to look up prices, work out calculations and prepare a neatly typed document.

QuoteMaster handles all three of these aspects and therefore cuts down on the delay between the initial contact with prospective customers and providing them with the all-important quotation.

When you use QuoteMaster you are, in fact, using a database without having to set it up for yourself. It has been created using Clipper, which allows the programmer to compile dBase code and then distribute it as a stand-alone application.

QuoteMaster depends on the use of two datafiles – a customer file which stores names and addresses and a standard item file which is essentially a sophisticated stock list which holds information about the goods and services you offer.

So if you are a central heating engineer it would contain the prices of radiators and immersion heaters, and if you are a computer consultant it would include prices of software packages.

In both cases the information stored would include prices of standard jobs rather than items at the level of individual nuts and bolts.

So the heating engineer might have a standard item that read "To service gas boiler" while the computer consultant might have one along the lines of "To initialise network and set up three new users".

Probably the best aspect of using a dedicated package to produce quotations, rather than just relying on a wordprocessor or a spreadsheet, either of which could be used to do much of the work involved, is that you can define a standard layout and produce every quotation to follow this style.

QuoteMaster enables you to define the layout you require for plain paper, a letterhead or even to fill in a pre-printed form. It includes three standard layouts which might suit you as they stand or can be used as a starting point for your own design.

Given that the standard item file has already been set up to contain the relevant details, preparing a quotation using QuoteMaster is just a matter of typing in the codes of the items required.

You do not need to memorise these, as pressing the F4 key produces a display of the item list. Setting up the item database is very straightforward – as is adding names and addresses to the customer database.

In every industry, goods and services are sold in terms of some units – by the square metre in the case of carpet fitters and decorators, and by the day or the hour in the case of consultancy.

QuoteMaster recognises five different types of units – items, numeric, linear, square and cubic and handles all the arithmetic involved in working out square or cubic units, giving you additional entry boxes to supply two and three dimensions respectively.

Where the selling unit is defined as Item, QuoteMaster expects a lump sum to be entered and asks for the value to be entered rather than a quantity. So where a quote involves a task that has a variable cost, such as "To decorate a house" you should use the Item unit and supply the value when preparing a quote.

### Discounts

QUOTEMASTER also includes a facility to give a lump sum or a percentage discount either on individual lines of the quotation or on the whole job. In the Standard and Professional versions this is a password protected option so that you can limit its use to authorised personnel.

Password protection is just one of the facilities omitted from QuoteMaster Junior. It also includes only one basic formatted layout and lacks the archiving feature of the larger versions which allow you to keep quotations on record after they have been produced.

If you often produce quotations that are very similar, and therefore would benefit from being able to base quotations on existing ones, you probably need this feature.

The Professional version, which is aimed at larger businesses, also includes more reporting facilities associated with existing quotations which, among other things, would allow you to examine lost orders (that is quotations that failed to be taken up). Other extensions include Ascii import and export facilities and global price updating.

This program fills an obvious need in that it makes a time consuming chore easy or it makes one that would normally be a subject to a bottleneck more generally accessible.

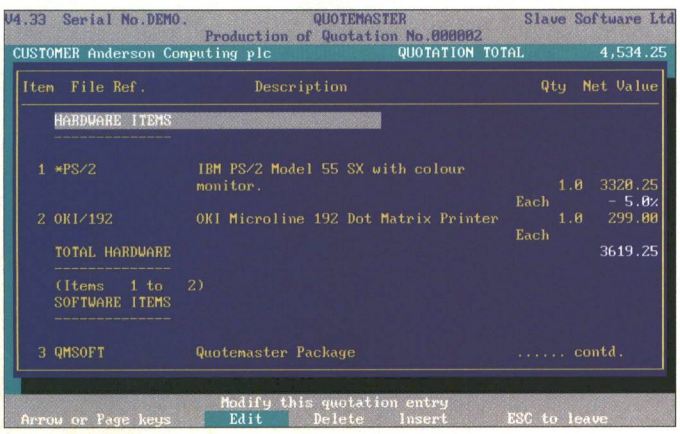
In other words, rather than waiting for the one person responsible for calculating or preparing quotes you can convert it into a task that can be done by anybody who can use a PC.

Although the Junior version has the advantage of only being £195 the facilities it lacks would probably be missed, but fortunately Slave Software will let you upgrade from the smaller versions to the more extensive ones.

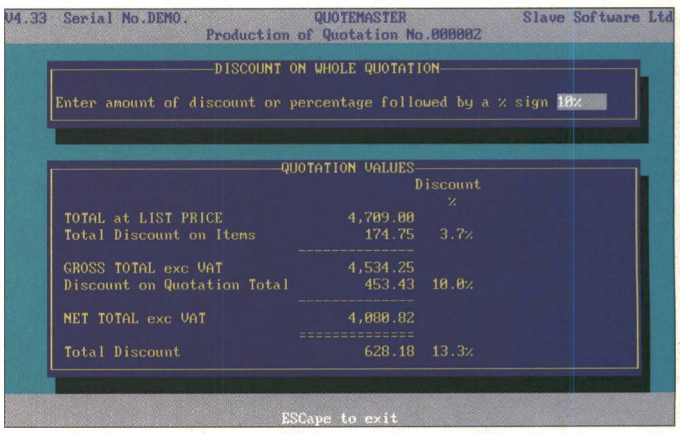
**Sue James**

### PROFILE

**Product: QuoteMaster**
**Price: £395**
**Supplier: Slave Software, University of Warwick Science Park, Coventry CV4 7EZ**
**Tel: 0203 692600**




❑ ***QuoteMaster Professional and Junior are for producing quotations for goods and services***




❑ ***QuoteMaster also includes a facility to give either a lump sum or a percentage discount***

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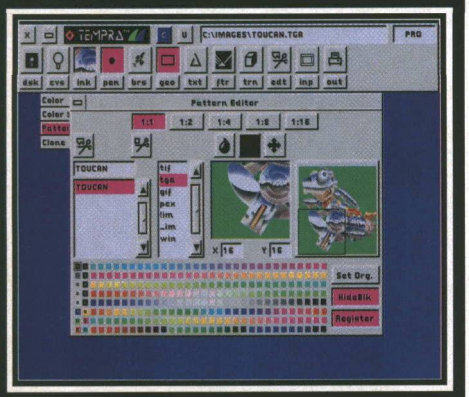
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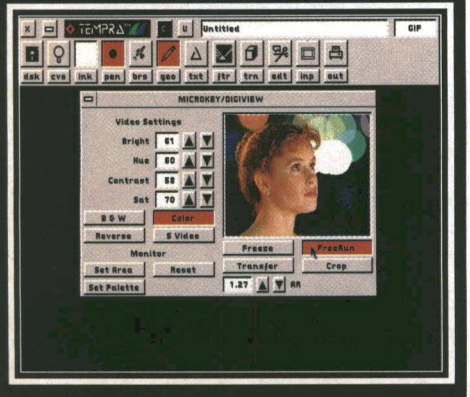
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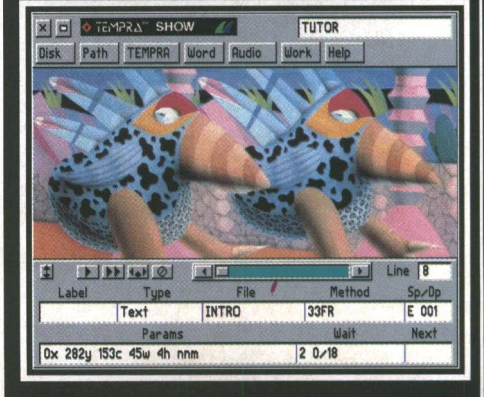
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## Disk & Directory Tool Kit: Outdated software

TO quote the manual, Kuma's Disk & Directory Tool Kit (DDK) is: "designed to provide the information about disk usage and contents, beyond DOS facilities. It also contains a sector editor which you should find much easier to use than Debug."

Placing the DDK directory in the Dos path, enables the program to be run from any disk on your system. This is where many users will encounter their first problem!

If the current disk is formatted larger than 32Mb, DDK cannot read it and another drive must be selected. Having found a readable hard disk partition, or a floppy disk, its contents may now be examined or edited.

Pressing R will enable DDK to read the current root directory and display a list of the first 16 files and directories, together with the start sector, file length, and number of sectors used by each file.

To view a sub-directory you press S. At this point the sector number of the directory must be entered. This seems to be a rather user-unfriendly method of selection, and is prone to errors through mistyping. However, on entering a valid sector number, the sub-directory is displayed.

Editing a sector is particularly tedious, requiring E (for Edit) to be pressed for every alteration. A whole word, for example, cannot be typed, as each letter requires a separate edit, and unfortunately, the boot sector and file allocation table (FAT) cannot be written to in this version of DDK, so alterations to directory or file names may not be made.

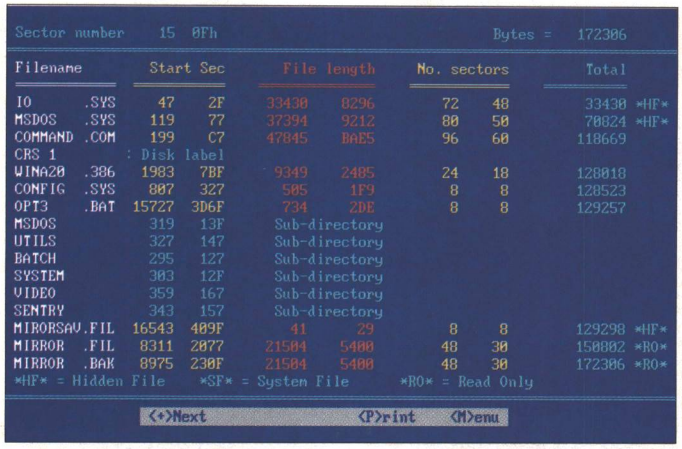
The facilities on offer include a map of sectors used on a disk, and a trace utility which lists the parts of a disk in which a file resides.

The 16-page manual explains the workings of a disk in great detail including the boot sector and FAT, and even how the disk is organised into cylinders and tracks, and the manner in which they are laid out.

This information will be useful to the novice, but a package such as DDK is not suitable for the inexperienced user, as irreversible damage may be caused. The manual does warn users of the risks involved.

The Disk and Directory Tool Kit does not meet the standards expected by today's user, and a quick flick through almost any shareware catalogue will probably reveal several more professionally presented packages that provide more facilities.

**Innes Borkwood**



Sector number 15 0Fh Bytes = 172306

| Filename | Start Sec | File length | No. sectors | Total |
|---|---|---|---|---|
| IO .SYS | 47 2F | 33430 8296 | 72 48 | 33430 *HF* |
| MSDOS .SYS | 119 77 | 37394 9212 | 80 50 | 70824 *HF* |
| COMMAND .COM | 199 C7 | 47845 BAE5 | 96 60 | 118669 |
| CRS 1 | : Disk label | | | |
| WINA20 .386 | 1983 7BF | 9349 2405 | 24 18 | 128018 |
| CONFIG .SYS | 807 327 | 585 1F9 | 8 8 | 128523 |
| OPT3 .BAT | 15727 3D6F | 734 2DE | 8 8 | 129257 |
| MSDOS | 319 13F | Sub-directory | | |
| UTILS | 327 147 | Sub-directory | | |
| BATCH | 295 127 | Sub-directory | | |
| SYSTEM | 303 12F | Sub-directory | | |
| VIDEO | 359 167 | Sub-directory | | |
| SENTRY | 343 157 | Sub-directory | | |
| MIRORSAV.FIL | 16543 409F | 41 29 | 8 8 | 129298 *HF* |
| MIRROR .FIL | 8311 2077 | 21504 5400 | 48 30 | 150802 *RO* |
| MIRROR .BAK | 8975 230F | 21504 5400 | 48 30 | 172306 *RO* |

*HF* = Hidden File *SF* = System File *RO* = Read Only

<N>Next <P>rint <M>enu

❑ ***DDK displaying the root directory sector information***

### PROFILE

**Product: Disk & Directory Tool Kit**
**Price: £29.95**
**Supplier: Kuma Computers, 12 Horseshoe Park, Pangebourne, Berkshire RG8 7JW**
**Tel: 0734 844335**

## Cardinal PC 10: The PC that thinks it's a Mac

THE Cardinal PC is a peculiar machine, resembling as closely as possible an Apple Macintosh computer – to the point where other people were commenting on the fact that I had abandoned IBM PC compatibles. The benefits that this provides are mainly related to the amount of space saved by the compact design.

However, the similarities between the Cardinal and a Mac are purely superficial because the Cardinal is very much a PC at heart. It utilises a standard 386SX chip operating at 16MHz – options for 20 and 25MHz processors are available.

The all-in-one construction includes a VGA monochrome monitor that is remarkably effective. A version with colour monitor will be available in the near future.

The standard model is provided with a 40Mb hard disk and 3.5in floppy drive. A version without hard drive is also offered at a reduced price.

The total package comes complete with DR Dos 6, Windows 3.0 and a PS/2 compatible mouse. The DR Dos compression facility effectively doubles the storage capacity of the hard disk at no extra cost.

Setting the machine up is simplicity itself as it is the epitome of the plug in and go concept and the low overall weight gives it a certain degree of portability.

Only a single mains lead, the mouse and keyboard have to be connected. Two expansion slots, two serial and one parallel port make it possible to connect peripherals as required.

Its tiny footprint makes it easy to accommodate on even the most cluttered of desks. Looking closely at the machine it is easy to imagine it being used in an office environment as a LAN station.

There is a strong case for using the PC10 in this way as its design precludes a lot of the upgrade options normally found on desktop machines. There are no spaces for additional drives and the concept of using an external drive would be self defeating.

The number of expansion slots limits the amount of extra hardware that can be installed. On the other hand the ram can expanded to 16Mb and the coprocessor slot is accessible.

At present Cardinal are the only manufacturers incorporating the monitor and PC into a single case. It is surprising that more manufacturers haven't also produced similarly designed equipment.

The absence of multiple cables cascading from the back make it probably the tidiest PC on the market.

The Cardinal PC10 is not a Mac and it never will be. Instead it is a highly functional piece of PC hardware that takes full advantage of one of the Mac's best features. Innovation, hardly – a good machine, definitely.

**Ged Start**




❑ ***Similarity to a Macintosh is undeniable, however performance is low-end PC***

### PROFILE

**Product: Cardinal PC10 386SX-16**
**Price: £750**
**Supplier: Sunningdale Systems, London Road, Sunningdale, Berkshire SL5 0DJ**
**Tel: 0344 874808**

## WinCAD: Computer aided design in Windows

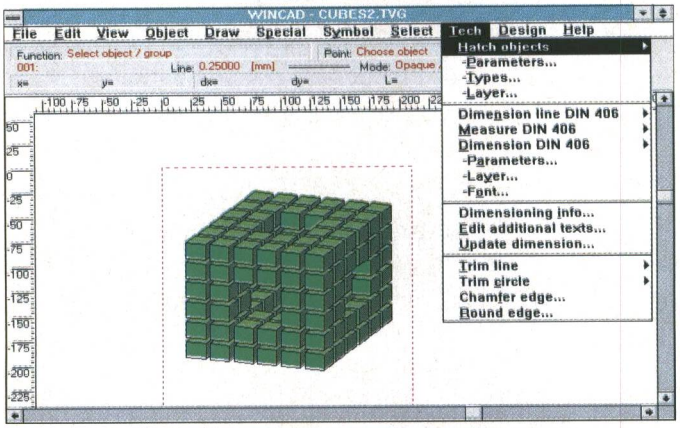
WITH so few CAD packages for Windows, WinCAD has to be interesting. It is a produced by the German software company, Tommy Software, and the translations of the manual and some aspects of the program's messages into English could be better.

WinCAD is a 2D CAD package and once installed the first thing you notice is the large number of menu choices. There is also a customisable icon palette, but even this displays 25 icons at five levels, making a total of 125.

Everything you could want for 2D drafting is present, but there has been no attempt to organise the drawing process to make it simple.

The range of drawing tools include, Line, Polyline, Triangle, Quadrangle, Rectangle, Trapezium, Parallelogram, Polyeder, Circle, Ellipse, Parabola, Zigzag line, Circle arc chain, Bezier chain and Spline.

Notice the duplication of similar drawing elements, once again bearing out the lack of a deeper organisation of the user interface, and the presence of advanced drawing tools such as Bezier and Spline curves.




❑ ***Everything you could want for 2D drafting is present***

WinCAD also seems to make too much of the distinction between open and closed curves. The ability to draw them is important, but it is possible to provide the facility without having a separate set of tools.

Once you have a closed curve you can hatch it or fill it with colour. For a CAD package WinCAD handles colour very well. It even allows you to load a PCX format bitmap to either hand trace or use as a background.

WinCAD is very hot on German DIN standards. You can select a range of DIN and non-DIN paper sizes, and DIN specification dimensioning. Dimensioning is fully associative, which means that it is always adjusted to take account of any changes in your drawing.

Labels can also be added using any of a range of supplied fonts. Characters from the current font can be placed in the drawing and scaled and rotated just like any other graphical object.

You can use up to 256 layers and colours can be assigned by layer. There are also a good range of construction lines, points and circles that can be used to place graphical objects. Construction lines show on the screen, but they are not printed.

There is a DFX file format convertor, but no facilities for managing views or sophisticated print options. It also doesn't make full use of the facilities offered by Windows.

WinCAD's designers have clearly spent a lot of time thinking about what should be included and what it should be able to do, but they haven't spent enough time organising its user interface.

**Mike James**

### PROFILE

**Product: WinCAD**
**Price: DM 1752**
**Supplier: Tommy Software, Selchower Strasse 32, W-1000 Berlin 44, Germany**
**Tel: 01049 39 621-4063**

## Touchtech 914: Digital equipment

FOR the desktop environment, a mouse and a keyboard will suffice for most graphics packages. If applications are to succeed in an unsupervised environment, simplicity of control is essential.

What could be more straightforward than touching a screen to perform the function you want? Until recently, the technology needed to achieve this was far too expensive for most companies.

Microvitec have produced a range of entry level touch-screen monitors designed to work with a standard PC.

The model I looked at – the 914 colour display – had all the hardware built into the monitor. Installing it was a simply a question of plugging in the standard VGA connector and a nine pin serial cable into COM1.

The supplied demonstration software contained a suite of programs which demonstrated a number of applications of the touch-screen.

If you wish to write your own, you'll most likely need Microvitec's authoring software: Poise. This is a flowchart-based language that doesn't require a high degree of programming skill and is based around using a touch screen as an input source.



❑ ***The Microvitec touch screen provides the ideal solution for unsupervised environments***

Although not bundled as standard, a number of drivers are available to let you use the Touchtech 914 with various software packages.

I tried the Windows 3.0 driver and was initially impressed. The accuracy that can be achieved by touching the screen was commendable. Dragging and dropping proved more difficult to perform and required an impractical amount of digital dexterity.

As a Super VGA monitor, the Touchtech performed well. Despite the extra layer the capacitive sensing adds, the colours were clear and bright. In high res modes, the picture was also steadier than most.

It was important to keep the display clean, as finger-marks soon reduced the clarity of the display. The model tested also provided audio support via an internal speaker.

Considering the level of technology employed, the Microvitec seems competitively priced. A powerful multimedia tool that doesn't cost the earth.

**James Tye**

### PROFILE

**Product: Touchtech 914**
**Price: £995**
**Product: Poise**
**Price: £295**
**Supplier: Microvitec, Bolling Road, Bradford BD4 7TU.**
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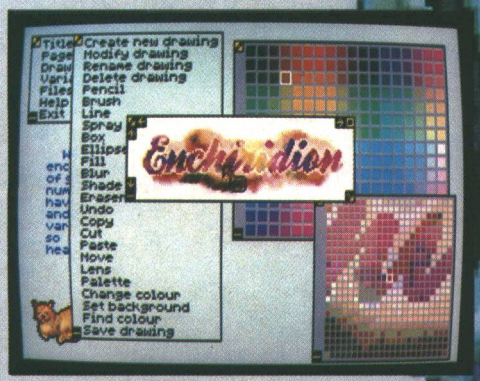
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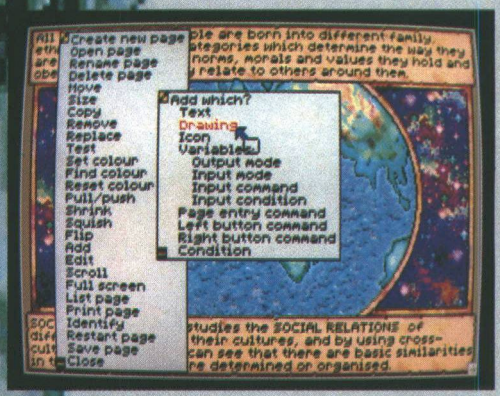
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## ChartBuilder Control: Visual Basic programming kit

VISUAL Basic is a great way to create Windows programs, but it helps if you have some extra tools. ChartBuilder Control claims that it makes complex charts as easy to add to a form as a simple button. Can this really be true?

One of the promises of Visual Basic is that it can be extended using custom controls, DLLs and DDE, but this sounds horribly complicated and the sort of thing that only an expert should tackle. Indeed the very simplicity that attracts users to Visual Basic suddenly seems to have vanished in a fog of jargon.

ChartBuilder Control proves that, as long as you don't want to write your own add-ons, the jargon is quite unnecessary. It gives you the power to create all those sophisticated looking charts that you see in spreadsheets within Visual Basic.

All you have to do is open the box, take out the disk and copy the files it contains into the Visual Basic directory. You start Visual Basic in the usual way and use the menu command File/Add File and pick GRAPH.VBX from the list.

This adds the ChartBuilder icon to the toolbox and you can use this just as you would any other tool – only this one places a chart on the form.

You select the icon then click and drag to mark out the area of the form that you want the chart to occupy. A moment later a default bar chart is drawn showing random data. You can drag and re-size the chart to suit the layout of your form.

### Customising charts

THE next phase of using ChartBuilder is to learn how to customise the chart objects. This is, of course, nothing new because every Visual Basic programmer quickly learns to customise objects by assigning values to their properties.

You can do this in two ways – interactively while the form is being designed by selecting the appropriate property and value in the property bar, or by setting the equivalent property variable in the program.

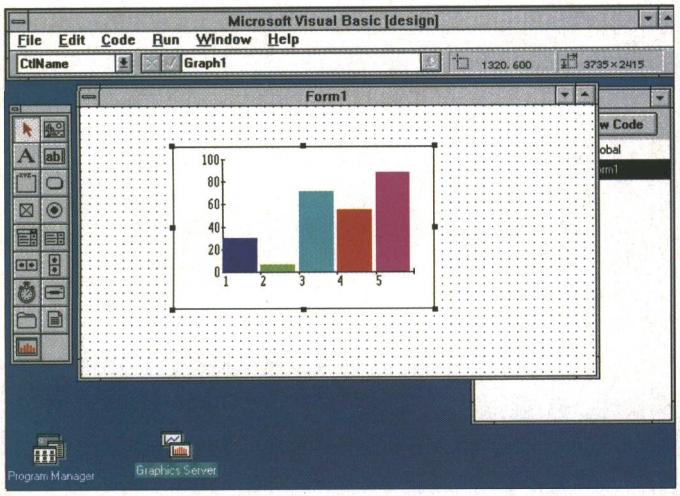
In the case of a complex object like a chart there are a great many properties that can be set, but many will often be left at their default values.

One property that you are likely to change often is GraphType. This has 11 possible type properties – 2D Pie, 3D Pie, 2D Bar, 3D Bar, Gantt, Line, Log/Lin, Area, Scatter, Polar and HLC.

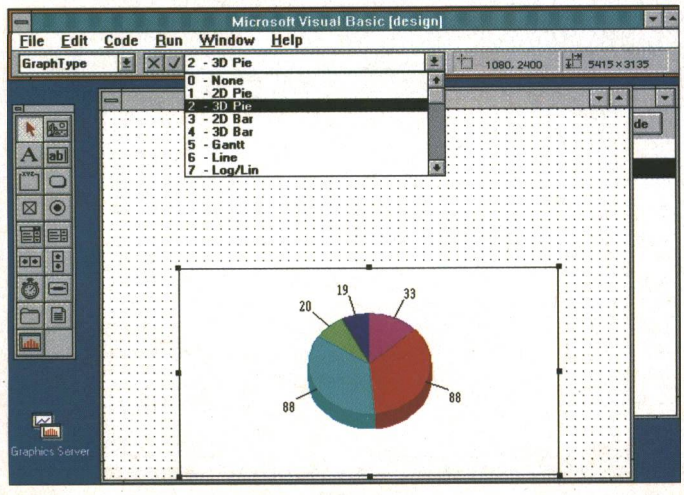
The only comment I can make about this range of charts is that it lacks any true 3D charts such as surface or contour plots, but these are mainly used in specialised technical applications.

Other properties include the ability to set the number of data series, the data values, labels, titles, colour and properties that apply to particular types of chart such as pie chart segment explosion.

The main purpose of this interactive design is to see what the finished form might look like, but as you can also specify the data to be charted I can imagine people using it for real!




❑ ***ChartBuilder really does make creating graphs in Visual Basic programs as easy as it can possibly be. It is therefore highly recommended***




### Array for VB

AS Visual Basic doesn't allow for arrays to be used as property values in an interactive manner, a new system has been invented for ChartBuilder. If you enter a sequence of values to an array property they are automatically stored in successive values of the array.

In other words, there is no need to specify an array index because it is automatically incremented each time you assign a value to an array property. This is an easy and natural way to solve the problem and I hope that other Visual Basic add-ons and future versions of Visual Basic use this method.

Once you have placed a chart on the form you can write event handlers for it or modify its properties within the event handlers belonging to other objects. For example, you could define:

```
Sub Graph1_Click ()
Graph1.GraphTy
pe = 1
End Sub
```

which would change the graph to a pie chart if the user clicked on it. Alternatively, you could place a button on the form and define its click event handler to do the same job.

At the moment you cannot define event handlers for sub-objects of the chart. This means that it isn't possible to write an event handler, say, for each segment of a pie chart or bar of a bar chart.

I dare say it might be possible to write a mouse event handler that used the coordinates to do the same job, but sub-object events would be easier. This feature is a possibility for the next version of ChartBuilder.

Charts can save themselves as images on the clipboard in either bitmap or metafile format. You can pass the name of the picture property associated with a graph and display it in a picture control. They can also print themselves and save themselves to disk and all by setting properties accordingly.

You can make graphs see-through and place them within others. Extra help is added to the usual help system. There is even a file of named constants which you can load to make it possible to write more meaningful commands. There is nothing left out of the package that would make it any easier to use.

If you develop applications that include ChartBuilder you can distribute the files required at run time without having to pay any royalties. A special licence file stops the user from being able to use the run times to develop new programs.

**Harry Fairhead**

### PROFILE

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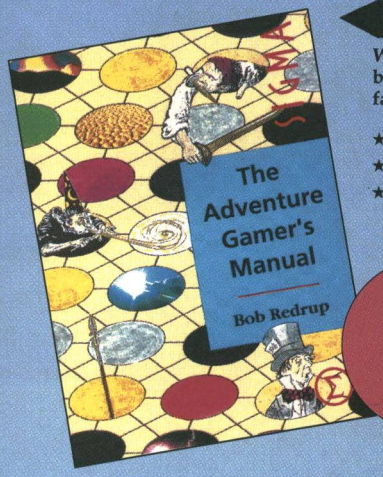
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## QuoteMaster Plus: Playing with words

STUCK for an apt phrase or saying? Then turn to Quotemaster Plus from PennComp. This is a database of literary quotes collected from a wide range of sources dating back almost to the beginning of the written word, with examples from Homer (circa 800 BC): *"Once harm has been done, even a fool understands it"*.

If you are looking for more contemporary advice there are also examples from personalities such as Tom Stoppard: *"It's better to be quotable than to be honest"*.

With 950 authors on the database there are plenty of well known names included. I sampled Chaucer: *"Filth and old age, I'm sure you will agree, are powerful wardens upon chastity"*, which captures the spirit if not the original spelling of the Canterbury Tales. John Donne: *"No man is an island, entire of itself, every man is a piece of the continent, a part of the main"*.

J.F. Kennedy: *"The greater our knowledge increases, the greater our ignorance unfolds"* which is a deep comment that no doubt crops up as a student essay subject with the word Discuss tacked on to it.

QuoteMaster Plus is designed for searching by subject matter. If you do a Topic Search you can choose from an alphabetic list of an impressive array of subjects.

There is something here for every after dinner speaker, essay writer, advertising executive, magazine journalist and would-be philosopher.

A Word search lets you look for any word you are interested in, so typing in *land* pulls out quotes about England, island, slander, and quotes by authors whose names include *land*, such as Walter Landor and Grover Cleveland.

You can search for more than one word at a time and specify a location dependent search in which case the program will produce quotes which contain the strings you specify in the order in which you typed them in.

So if you search for *man woman* you are presented with: *"Man has his will, but woman has her way"* by Oliver Wendell Holmes, and *"The female of the species is more deadly than the male"* – Rudyard Kipling.

Installing QuoteMaster Plus can take up to quarter of an hour as there are lots of files to decompress. The first time you use it there is a delay, but after that the time taken to find a quote is not unreasonable. Its menus are all self-explanatory and a help menu provides additional information .

QuoteMaster Plus has its own clipboard which you can use to store quotes that you want to transfer to another program or print out. If you want to use quotes in a wordprocessor you can run QuoteMaster Plus as a TSR in its pop-up GhostWriter mode.

Then by pressing a hot-key combination you can go straight into QuoteMaster Plus, collect quotes you need on to the clipboard and paste them directly into your document.

The QuoteMaster Plus database contains over 3,000 quotations, but there are an additional nine supplementary databases each with a further 500 or so quotes. These are titled humorous, humour II, motivational, humanity, success, contemporary, business, religion and popular culture.

In addition an author information database gives historical data on over 1,700 authors whose immortal words have been quoted. Although these add-on modules are available separately in the US, Roalan have bundled them in the QuoteMaster Plus Professional version.

If you make a lot of use of this program you will probably be very keen to have access to the author database both to check details of personalities you are already familiar with and to discover who some of the more obscure authors are.

With this extra database installed, the synopsis can be displayed or printed along with the quotation.

The only historical information included is a date. Unfortunately, that used for a quote is the author's birthday – so for example all the J.F. Kennedy quotes are dated 1917 which seems a little bizarre.

The quotes are divided by the database into four time periods – Modern 1920 to 2000, Industrial 1800 to 1920, Renaissance 1650 to 1800 and Ancient 999BC to 1650 AD.

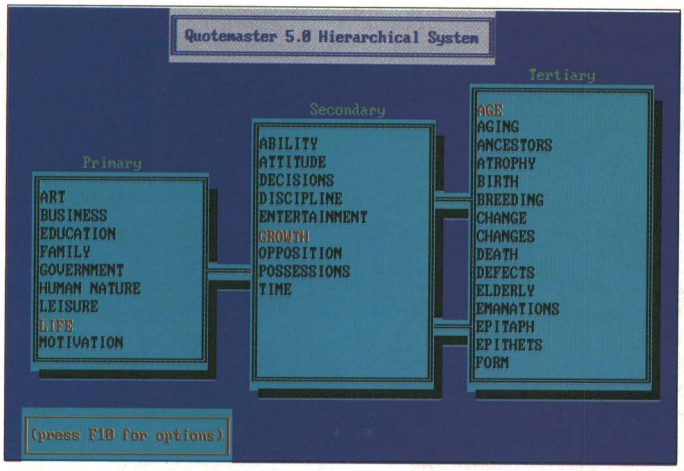
This is, at best, a rather coarse classification and the use of birthdates to allocate quotes to their era explains why there seem to be a disproportionately small number of quotes in the Modern category.

QuoteMaster Plus is fun to use, but you need to bear in mind that it is an American package. This means you may find some of your favourite quotes misspelled by the use of words like humor. But beware not every occurrence of humour has been changed so if you are doing a word search include both variations to be certain of a match.

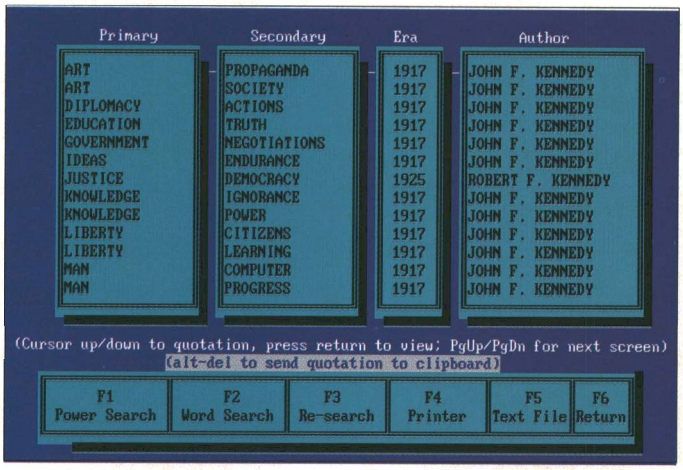
It also means that there are some unfamiliar names in the author list, such as Nelson Algren (born 1909) whose entries include: *"Never eat at a place called Mom's. Never play cards with a man named Doc. And never lie down with a woman who's got more troubles than you"*.

Although some well known Englishmen are not included, the list of authors is pretty cosmopolitan – with Marx, Khrushchev and Mao Tse-Tung joining Jean Paul Satre, Machiavelli and Elizabeth I.

**Sue James**




❑ ***A Power Search uses a hierarchical system of filters and searches not only on the word specified as the primary choice, but also on synonyms***




❑ ***A search on the author Kennedy proves that JFK is well represented in QuoteMaster Plus, but notice that his era is given as 1917 – the year of his birth***

## PROFILE

**Product: Quotemaster Plus**
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**Product: Quotemaster Plus Professional**
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# POWER USER'S PROGRAM

**Phil Evans takes a close look at a new utility package designed to improve the functionality of Windows**

I MUST confess that I'm a Windows' enthusiast. I like the concept of a graphical user interface and have done since I first used an Apple Lisa, the ill-fated predecessor to the Mac. However, I am not so besotted with Windows – the PC's GUI – that I haven't realised it has some shortcomings. Among my list of pet hates are File Manager and the fact that icons won't stay where you put them.

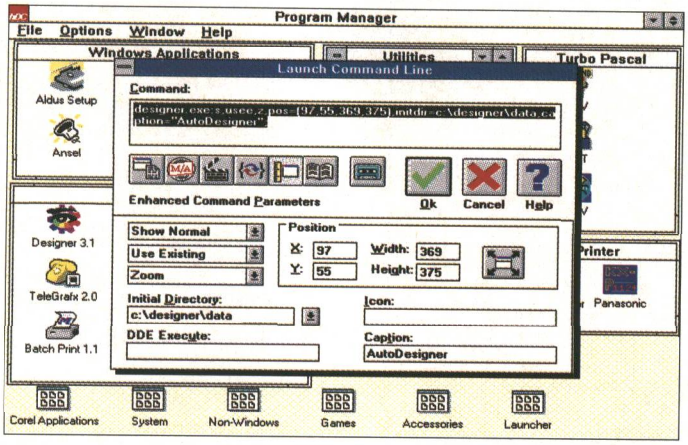
While Windows is a very clever operating environment for applications and looks pretty, the ways in which it interacts with the user are quite clumsy in several areas. You only have to look at the number of File Manager and Program Manager substitutes to realise that.

Power Launcher, from hDC, is not a substitute for an existing Windows shell like Program Manager or a third-party product, but it is intended to work in tandem with one, and enhance its ease of use for power users.

To this end, it consists of several utilities including an application launcher, virtual screen manager, timed event scheduler and task manager, and a very powerful macro capability.

Once installed, Power Launcher can be invoked when wanted like any other application, but to do this would be to lose most of its benefits. Instead, a LOAD=POWER.EXE line at the start of your WIN.INI file will cause the Power Launcher to be loaded automatically every time you start Windows.

The red hDC box in the top left-hand corner of the screen is the sign that it is loaded. The first and most obvious feature of the program is the launch capability itself. Clicking on the red hDC box and then selecting Power Launcher gives you an icon-driven way of selecting an application to load and run.




❑ ***The Power Launcher facility to run a program can exert a considerable degree of control over how and where an application window is shown on screen***

If that were as far as the process went, it would be a slow and cumbersome way of doing something you could do from Windows itself, but there are a number of further options.

Selecting multiple documents from the dialogue list will cause each of them to be loaded. This will only work, however, for those file types whose extensions have been associated with a program in WIN.INI. As every application I have tried sets this parameter for you on installation, it should not cause a problem.

Besides running the application, several parameters controlling how and where it is launched can also be set. These include setting an initial directory, specifying the size and location of the window the application runs in and creating dialogue boxes that appear when the application is operating. This is all done using a point and shoot process with the mouse and requires no programming at all.

This, however, would still be laborious and would rapidly become a nuisance if you had to go through it every time you wanted to run an application. The solution is that you can create menu items on the Power Launcher menu itself and control your launches from there.

The process of creating menu items is simplicity itself. A single menu item can be created by selecting Menu from Power Launcher, giving the menu a title and then repeating the commands used to run the program. The command history containing the last 20 entries enables you to use Power Launcher to get the commands right.

When you are happy that it is working properly, you select Menu and attach the last command from the history buffer to repeat the sequence exactly.



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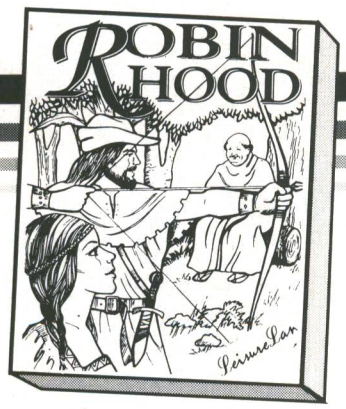
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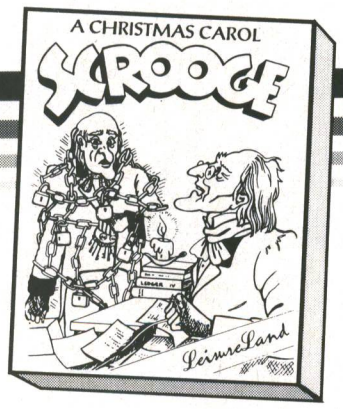
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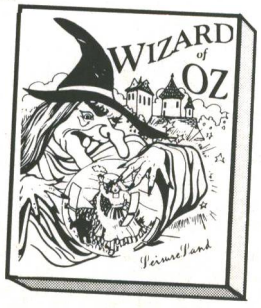
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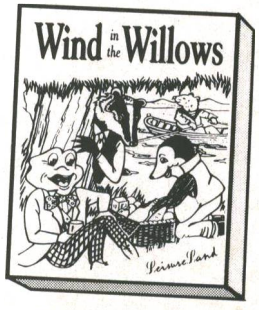



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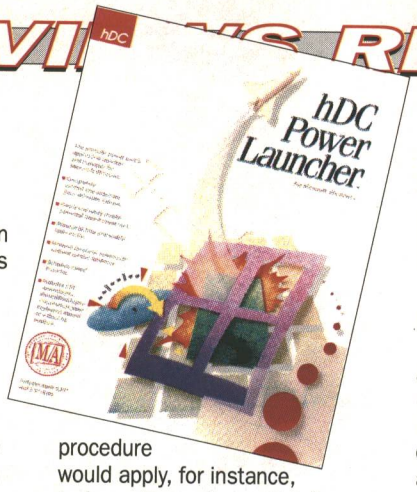
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Multiple menu items can be created using the Multi button in the Configure Menu screen. This uses the same procedure as before, but comes back to the Configure Menu screen, rather than the Windows Desktop.

If you already have several applications sharing a Windows group, you can create the entire nested menu by selecting Menu in Power Launcher and using the Import button.

This expects you to point to a Windows group file then creates a main menu item for that group, and a drop down menu item for each application in it. It enabled me to create a menu containing my Micrografx graphics applications (all seven of them) in about a minute from start to finish.

Because Power Launcher is an addition to the Windows control box, once active, it is present inside whatever application you are running. Having set up the Ansel software driving my scanner on the Power Launcher menu, I am able to activate it and scan an image, save it and quit Ansel from within Designer.

I don't have to minimise Designer to get back to the desktop first. The same procedure would apply, for instance, to formatting a floppy disk from within an application.

Power Launcher menus are hierarchical and you can call a sub-menu from any item. I did not test this beyond four levels of menus because, in practical terms, working through several layers of items is awkward to use and negates the benefits of the menu facility.

But the software seemed quite happy to cope with it. Because of the hierarchical menus, it is easy to bunch applications together in logical groups, keeping the top level menu small and manageable.

It is not so much that the menu facility allows you to do anything you could not have done anyway, it is the ease with which you can do it. It is a great boon if you frequently move from one application to another and I'm already finding it indispensable. For me, this alone makes the package worth buying at the price, and the story doesn't stop here.

## Useful extras

A USEFUL little extra is the virtual screen hDC have built into Power Launcher. By default, this comes configured as a three by three array, but can be enlarged up to eight by eight. This effectively increases the size of the desktop by up to 64 times and means you can leave several applications maximised.

Switching between them is either by clicking the right hand mouse button on the desired screen on the Virtual Screen map, or by using Alt+Tab to page between open applications.

Power Launcher also contains a macro facility and recorder. From the Configure Menu option in the Launcher, selecting the macro button turns the recorder on. Any keystrokes or mouse movements made will be remembered until the Stop button is pressed. The macro can then be added to the menu and played at any time just like any other menu option.

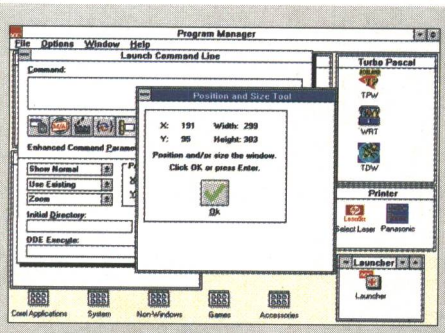
At least, that is the theory. In practice, this unfinished beta test version of the program seemed to record things it shouldn't. This resulted in macros that wouldn't run and caused some execution failures. This was the case even when following the instructions for examples given in the documentation.

Judicious editing of the recorded macro to remove these spurious commands, however, resulted in a macro that ran properly and did exactly what it should (the test was to load File Manager and format a disk in drive A).

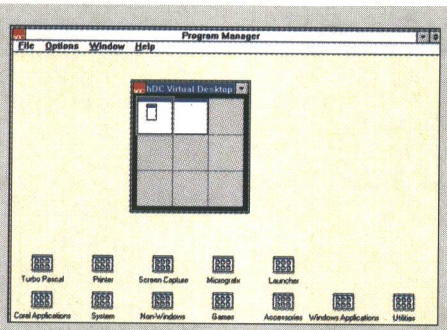
Remember, it is possible that these rough edges will have been ironed out by the time the product is released and hopefully, this problem will not exist in the production version.

An extension of the type of facility offered by macros is that of scripts. Power Launcher is supplied with a collection of 70 or more to do such things as set the printer into portrait or landscape mode, close all applications, or exit Windows with or without prompting the user.

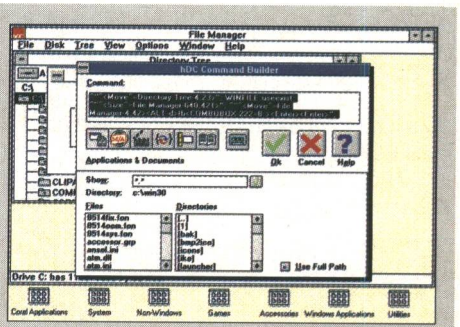
This extremely powerful facility is marred by the fact that there is currently no way to create or modify these scripts. There should, however, be a MicroApp



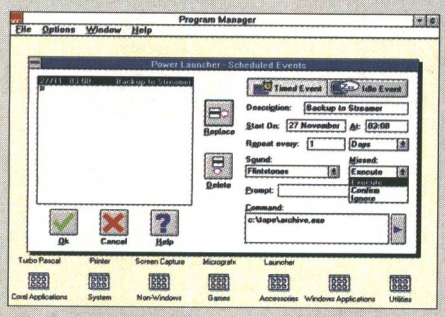

❑ ***The size and position of a window is set by manipulating the Position and Size Tool. The program then reads the resulting settings for you***



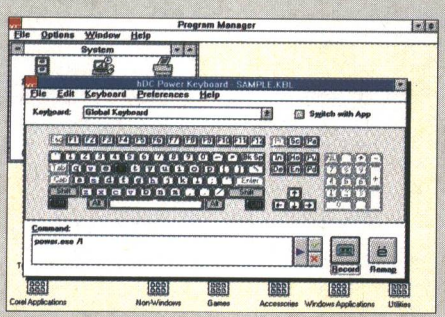

❑ ***The virtual desktop offers a quick and simple way of moving between multiple applications, each of which can be running maximised***



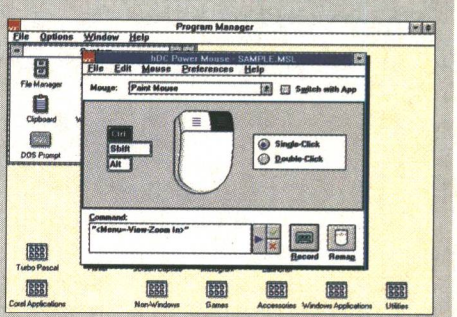

❑ ***The macro recorder automatically writes the commands from your keystrokes. Good job it does, from the look of this macro***




❑ ***Timed events can be set up very quickly. The start time, frequency of operation and action if the events are missed, are clearly shown***




❑ ***Keys with definitions attached show up in blue on the keyboard template. They are quite straightforward to set up***




❑ ***The process of setting up the mouse for Power Launcher is also very easy, and again buttons with definitions show up in blue***

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that will create or edit them.

Besides Setting up menus giving easy access to frequently used commands, there may be occasions when it would be useful to have them operate automatically. The event scheduler option can be used to set commands to operate at a specified time, or after a specified period of inactivity.

The event scheduler could be used, for example, to perform a back-up to a tape streamer at 3am or to dial an online service and download share prices at 5:30pm.

The idle time option could be used to load a screen saver if a machine hasn't been used for 15 minutes, preventing the need to have it active in the background when it isn't needed.

There is an alarm option in the event scheduler that causes the speaker to alert the user of a scheduled event. In addition to the usual range of puerile beeps, this could be set to play a few bars of one of many tunes.

I shudder to admit it, but I loved this. The theme from Indiana Jones was particularly effective, and having a tape back-up accompanied by the sound-track from the Flintstones appealed to my sense of the ridiculous.

## More utilities

ON a more serious note (excuse the pun), three additional utilities called PowerApps supplied with Power Launcher offer some particularly useful possibilities. These are the Power Keyboard, Power Tool Box and Power Mouse.

The Power Keyboard enables almost all keystroke combinations to have commands, macros or applications associated with them. If you regularly use commands for cut, copy and so on, you could remap the keyboard to access these as Control+X and Control+Y.

Similarly, a function key could be programmed with your name and address, which could then be inserted into documents with a single keystroke.

Special characters can be assigned to keys, so that Alt+C for example, would insert a copyright symbol. This saves the effort of looking up the ANSI codes each time one of the programmed characters needs to be inserted into a document.

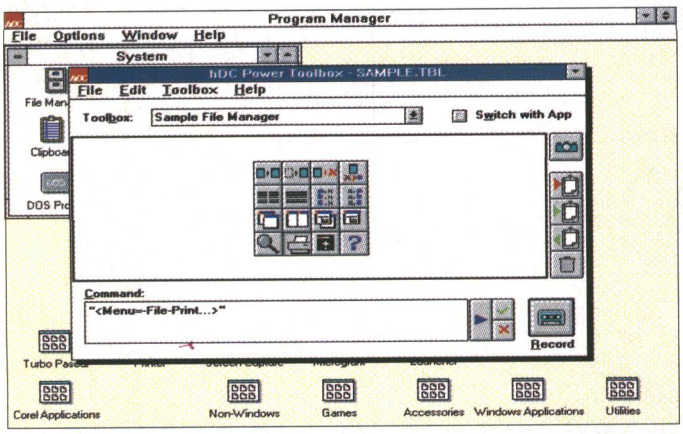
Numerous different keyboard maps can be created and they can be set to have a global effect, or to be application specific. If they are the latter, they can be loaded automatically with the relevant application, although this automatic load facility can be turned off.

Power Mouse offers the same kind of facilities as the Power Keyboard. The preferences menu enables the mouse to be configured as either two button or three button.

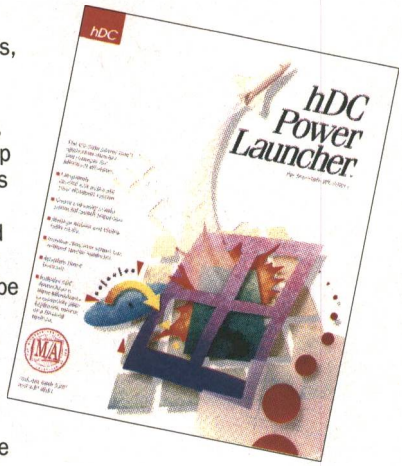
Commands can be associated with either a single or double click and in conjunction with any combination of the Control, Shift and Alt keys. Existing application mouse functions can be remapped to other buttons.

As with the Power Keyboard, mouse settings can be application specific or global and if specific, can be loaded with the application.

PowerApp enables a fully customisable floating tool box of user configurable size to be defined, again either globally or by application. By default, all the buttons on the tool box are blank.




❑ ***Once it has been defined, this tool box can be set to be permanently visible, or just to appear when called***




Unfortunately, there is no way to design a bitmap for the buttons inside Power Launcher.

The recommended technique is to use a paint program such as Windows Paintbrush to design the bitmap. There is, however, a capture tool (a camera icon) that allows any part of the screen to be captured and pasted on to a button.

Given the range of facilities and the overall well-rounded feel of the package (even in beta form), I think it is a shame that there is no way to design these bitmaps within Power Launcher. After all, among hDC's other products is a highly competent Icon Designer and I can't imagine it would have been difficult to adapt this.

## Conclusion

***POWER Launcher is not aimed at the occasional Windows user. Nor is it really aimed at those who use Windows a lot, but with only one application at a time. Its intended market is given away in the title – Power Launcher is aimed at power users.***

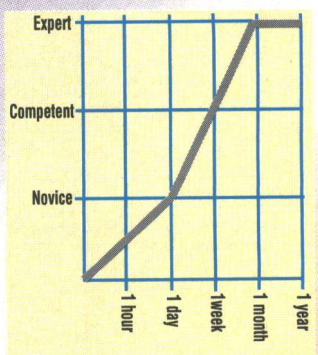
***To get the most from it, a fair amount of time and thought needs to be devoted to setting it up. This would pay the biggest dividends in a corporate environment where a central support department could design the command sequences and macros, and install them on the relevant user's machines.***

***I like Windows and I use it a lot. While writing this review, I kept surprising myself by coming up with new ways in which Power Launcher could save time for me. It is something of a wolf in sheep's clothing. While the basic menus can be set up in moments by even the least experienced user, some of the more sophisticated features will require much more effort.***

***Overall, the whole package is very easy to use and given that the rough edges of the beta version should be easily polished off, Power Launcher will become an indispensable part of the toolkit of serious Windows users. And at under £60 it is astonishing value.***

## PC TODAY PROFILE

**Product: Power Launcher**
**Price: £59.95**
**Supplier: Frontline Distribution, Intec 1, Wade Road, Basingstoke, Hampshire RG24 0NE**
**Tel: 0256 463344**




### FOR

**Power Launcher has a host of useful features. It is quite inexpensive. Ease of use was a high priority in the design.**

### AGAINST

**It is currently without a bitmap designer or script editor.**

### TECH SPEC

**Hardware: 286 PC or better, hard disk, Windows.**
**Technical Support: Free telephone support.**

| | |
|---|---|
| Ease of use | ☑☑☑☑☐ |
| Functionality | ☑☑☑☑☐ |
| Documentation | ☑☑☑☑☐ |
| Value | ☑☑☑☑☑ |
| Overall | ☑☑☑☑☐ |

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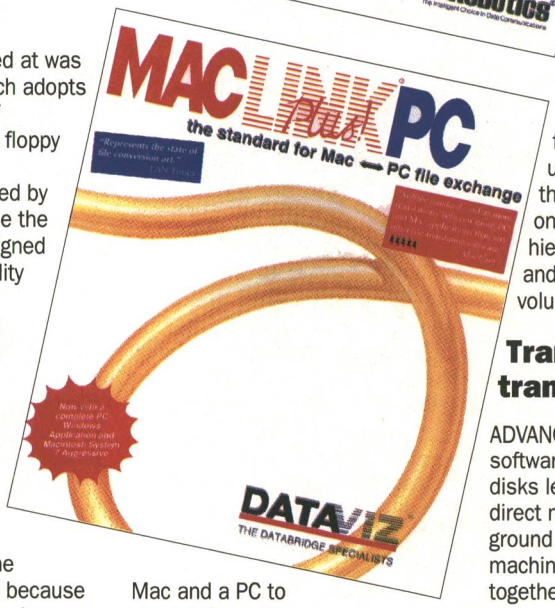
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# SPEAKING WITH THE ENEMY










**OVERCOMING their traditional rivalry Apple and IBM agreed to cooperate on future projects by signing a series of agreements in 1991. According to Apple, sales of their Macintosh PCs have grown considerably in the past 12 months, though they are nowhere near the scale of PCs.**

**Price reductions and performance analysis have indicated that the Mac is becoming a serious alternative to the PC for home and business use and this has been one of the main reasons behind the joint venture.**

**Many current business and home users' work have some exposure to both systems and there is often the need to transfer files between the two machines. Many offices would find work much easier if they could translate files as well as copy them.**

**Several types of program exist that will perform these tasks with varying degrees of sophistication and success.**

## Transferring files from a Mac to a PC needn't be a bother any more. Matthew McGrath investigates some methods now available to make the task much easier

THE first product I looked at was called Access Mac, which adopts the simpler approach of transferring files via the floppy disk.

Access Mac is supplied by Avantek and claims to be the first software utility designed to provide PC compatibility with Macintosh floppy disks. It is a simple and straightforward program that comes on one disk and functions by using your 3.5in drive to initialise a disk in Apple Macintosh format. Then files may be copied in both directions.

The company claim the software was developed because there was none available that would read, write and format a Mac disk on a PC, despite the fact that since 1989 all Macs have been supplied with a Superdrive – 1.44Mb format, which – theoretically – enables a Mac and a PC to share information.

Transferring the information from floppy to hard disk takes just a few moments. To then read a Mac disk all you need do is type Mdir, while Mcopy transfers the files copy to the drive of your choice.

Initialising a high density disk for use with the Mac also requires just a simple command. The small manual accompanying the program details all the switches available with the directory, copying and initialising commands.

Access Mac is a handy though limited facility. Retailing at £98.40 the program is useful for straight file transfers in common formats. One problem for users might well be the fact that all the commands will only work with Macintosh hierarchical directory volumes and not with flat directory volumes.

### Transfer and translate

ADVANCES in file transfer software has made the use of disks less popular. Other more direct methods have gained ground particularly where machines are close enough together so they can be physically connected.

One of these methods is a program from Traveling Software called Laplink Mac. A derivative of the original Laplink product, it

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works in almost the same way.

One major advantage over programs like Access Mac is the ability to translate files from the format in which they were created to the format in which you now want to use them, though this facility has limitations.

Laplink Mac lets you transfer files between Macs and PCs over a cable or via the telephone line. Once you've installed the software on each of the machines and connected them via the cable you'll see the Laplink screen with directories and files on either side.

Copying files across is a simple process and the software has many of the benefits of Laplink Pro though it lacks the text editor that came with that program and some of its sorting and comparison features.

The major advantage of a program like Laplink Mac over Access Mac is the ability to translate and convert files. This works primarily with MacWrite files which can then be translated into many formats for PC use.

The developers explain the MacWrite bias by saying that since most wordprocessors on the Mac can read and write MacWrite files, the emphasis has been put on what these files can be translated to.

You can also exchange spreadsheet and database files between the two systems. To use a Macintosh Excel file in Lotus 1-2-3 on the PC you would save the file in Excel in WK1 format with a .WK1 extension. Once copied to the PC the file can then be used by 1-2-3 without any further translation.

## No graphic translator

ONE aspect of the program that may surprise you is that it doesn't provide translators for graphics, as it claims there are many good programs available in both formats for that purpose.

The program can copy and translate files at the same time, which considerably slows down operations, but comes in handy if you're moving large quantities of information from one machine to the other in one fell swoop.

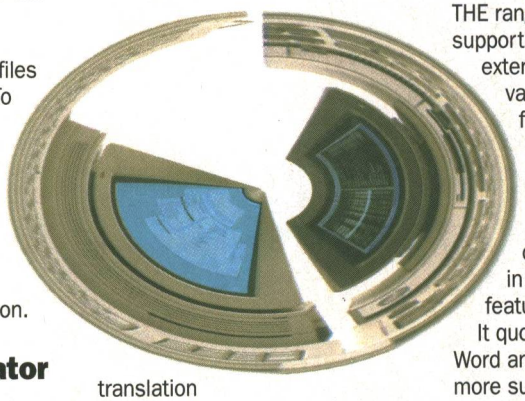
One tip for those using WordPerfect files on both machines is that the Macintosh will not read any WordPerfect files from the PC other than those from version 4.2. Files from later versions must be translated to 4.2 before they can be read.

The Ascii translators are another interesting feature of this program as there are three – smart, standard and stripped containing varying amounts of information.

The Smart Ascii mode contains the most formatting information, while the stripped files are without formatting and are most suitable for use in DTP or typesetting applications.

Packaged with incredibly well designed manuals, the performance of Laplink Mac is excellent, and selling at £110 it's tremendous value for money.

MacLinkPlus from Dataviz is another file transfer and translation package that works in Windows or Dos. It also uses the RS232 serial port on the PC and connects to the printer or phone port on the Mac or can be used with a modem.



The most immediate observation about MacLinkPlus is the nature and quality of its packaging. The manuals are comprehensive and the program disks are contained in a wallet with explicit instructions on how to get the system working. The package also contains the leads and a detailed diagram on the bottom of the box on how the system operates.

Installation on both machines is easy. Connecting over the cable requires you to set the parameters on both machines then enter the instructions on one machine first.

One word of warning – when setting the baud rate do not exceed 19,200 under Windows. However, speeds can be up to 57,600 under Dos. It is very easy to set different speeds on both machines, but this will cause you problems.

Once the speeds have been set correctly the program offers the choice of either copying files or transferring and translating simultaneously.

## Multiple file formats

THE range of files and formats supported by this program is extensive. It covers a wide variety of wordprocessor formats and where the program of your choice is not available the manual provides good advice saying that you should choose the format richest in wordprocessor formatting features.

It quotes the example of DCA, Word and WordPerfect being more suitable for this task than WordStar. The manual also provides comprehensive descriptions of what the translation process will retain when going from one application to another.

In terms of spreadsheets and databases this is the best equipped translation program I've come across. It handles a multiplicity of formats and it will also translate PageMaker files from PC to Mac and vice versa – definitely a boon for anyone involved with desktop publishing.

The program also has the facility for transferring graphics files. It handles PICT, CGM, PCX, BMP and WPG files among others.

Again, transferring and translating was quite processor-intensive on both machines and it is definitely faster to transfer to and from Windows.

Other than that minor quibble this package was the most comprehensive and best supported on test.

There are other ways of transferring information from Mac to the PC, but the basic methods stay the same. The products tested here are a representative sample and each in its own way worked well.

Comms software lacks the subtlety to provide the ideal solution. Translation programs offer much more and both Laplink Mac and MacLinkPlus are excellent performers, and superb value for money, too.

## A Blast from the past

**Aside from a dedicated package like MacLinkPlus another method of transferring information from PC to Mac is to use a communications package, preferably one that has versions available for both machines. One such package is Blast.**

**It is called Blast Professional on the PC and, naturally enough, Blast Mac on the Apple Macintosh.**

**On the PC the program lets you connect with a variety of computers over a LAN, via the telephone or over hard-wired cables. It transfers files with the 100 per cent error-free Blast protocol, Xmodem, Ymodem, Zmodem and Kermit protocols. The program offers remote control over the other computer and will transmit at up to 115,000 baud over standard RS232 circuits.**

**The problem with this program is that it does not offer any file conversion facilities. What it does offer is speed plus all the other benefits of a top-end communications program.**

**Using communications software is not without its difficulties, but Blast is one of the best I have encountered and if you use comms software often this may be the best method for you.**

## PROFILE

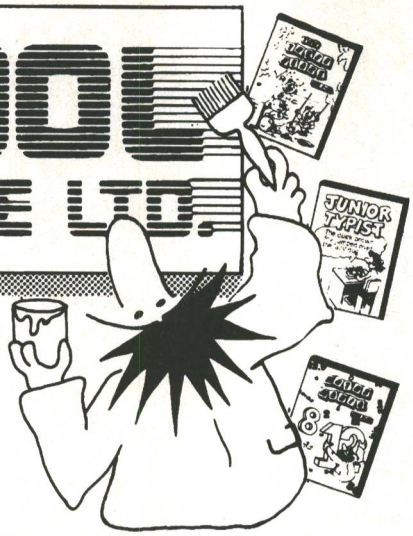
**Product: Access Mac**
**Price: £98.40**
**Supplier: Avantek, 2 Midfield House, Polton Road, Lasswade, Midlothian EH18 1ED**
**Tel: 031-660 5213**

**Product: Laplink Mac**
**Price: £110**
**Supplier: Traveling Software, Lords Court, Windsor, Berkshire SL4 3DB**
**Tel: 0753 830222**

**Product: MacLinkPlus**
**Price: £159**
**Supplier: Principal, 1 Gleneagle Road, London SW16 6AY**
**Tel: 081-677 7631**

**Product: Blast**
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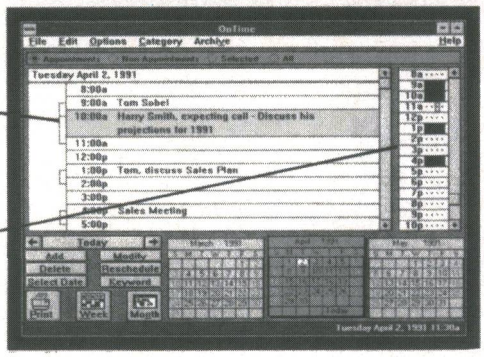
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# PLANNING THE TIME OF YOUR LIFE

**Can computerised time management make you more efficient? Roger Shezall makes a date with OnTime for Windows**

DO you remember how, back in the early '80s, the pundits were forecasting that the technological revolution would bring us all more leisure time? We would enjoy shorter working hours and longer weekends while the machines did the work. Utopia, indeed!

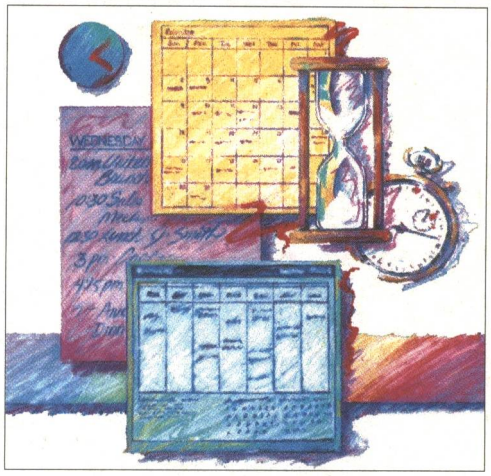
Yet a straw poll among my friends and acquaintances reveals, if anything, the reverse has happened. Most lifestyles today, both at home and at work, appear to be fairly frantic, often characterised by the White Rabbit's dictum: "So much to do, so little time!"

If you have to achieve more and more in less and less time, or if your daily schedule is often hectic, help with organising your time more effectively may be at hand in a new calendar program from Campbell Services. OnTime For Windows is an easy-to-use time manager that lets you prepare to-do lists as well as month, week or day planners, and print them out.

How odd, you might think, to produce a calendar program specifically designed to run under Windows, when it comes with its own, built in. But OnTime For Windows must be one of the most comprehensive calendar systems ever devised, with a range of features and functions that puts most of its peers very firmly in the shade.

The main idea behind OnTime is to let you see at a glance exactly where your time is being used and how much unallocated time is available to you. This is achieved through screen layouts which are quite superb, both from a graphic as well as a practical point of view.

## Filling appointments



BY default the program opens with a display of the current day divided into one hour segments. You can, however, choose 15 minute or half hour segments if these suit you better.

At the base of the screen is a highlighted calendar of the current month, with last month and next month either side of it, and a simple group of function buttons.

As you start to fill in your appointments for the day a vertical window at the right blocks out the time slots you have taken, so that you can easily see how much free time you have left.

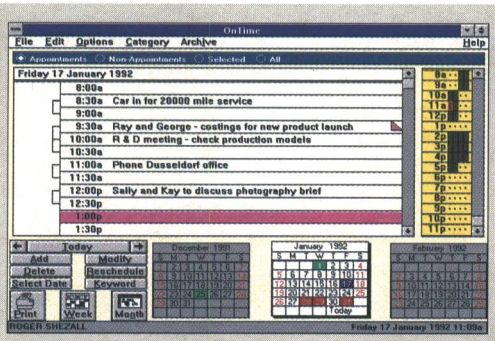
Making entries is simplicity itself: Just double click on the time band you want and a text editor with a range of options appears. Type in the details of your appointment, set the amount of time you estimate it will last for and click on OK. The entry will now appear in the day's schedule.

It may be that you have appointments which occur regularly, such as a production meeting on a Monday, or a sales meeting on a Friday. You only need enter these details once, then set the frequency adjustment to repeat the event as often as is necessary.

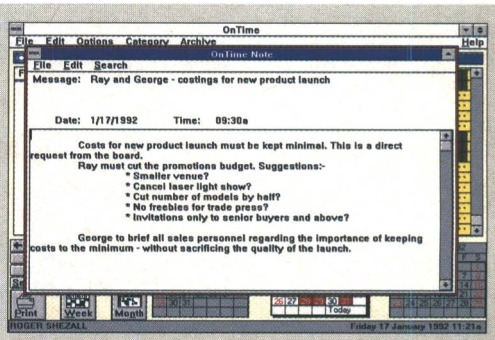
This is particularly useful for keeping details of birthdays and anniversaries. The program will maintain and track this data right through to the year 2079 which should certainly be enough for most people.

And since, even with a time manager, life never quite works out how you plan it, appointments or other entries can be instantly modified or rescheduled any way you like.

Each entry can consist of up to 80 characters, but if you want more information included you can use the add-a-note facility. Once you have added your note it produces a triangle symbol on the item and by clicking on this your note appears. Notes can be edited and printed out separately if required and, by using the clipboard, could include items ➤




❑ ***The default opening screen showing appointments which have already been entered for the day. The vertical yellow panel illustrates graphically how much of the day has been taken up***




❑ ***The Add a Note dialogue box displaying the note attached to an appointment entry. Notes are instantly recalled by clicking on the yellow triangle symbol***

imported from other Windows applications.

One of OnTime's more over-the-top features is the Alarm call, although no less effective for all that. The alarm is both visual and audible, can be set to remind you of any appointment, and will operate over whatever Windows application you happen to be using at the time.

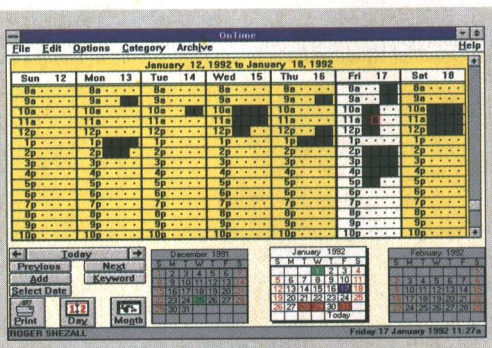
As readers with perfect pitch will know, the normal PC beep tone is set at middle C, but nothing so ordinary is used for OnTime. You can choose from a dozen different alarm tunes ranging from the gentle strains of Fur Elise or Greensleeves to the more robust Battle Hymn of the Republic or an Irish Jig.

There's even a tune called You're Busted!, which turns out to be the theme to the ancient TV series Dragnet. A snooze button thankfully shuts off the alarm for an adjustable period before it sounds again.

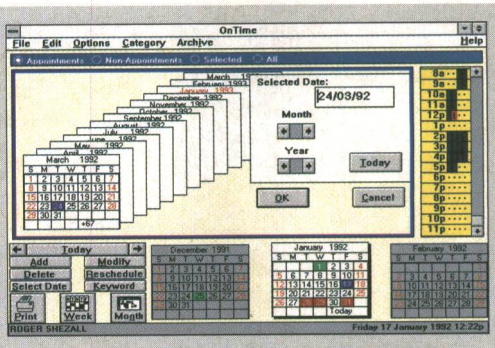
As well as appointments you can also create to-do lists of tasks to be completed on a particular day. Assign each entry a priority number and the program will list all the items ranked in order of importance. Once done, items can be deleted or – a nice touch this – deleted and archived.

This means you have a permanent record of what you have done, and when you did it, without it taking up screen space. What's more, any tasks you don't complete on time automatically roll over to the next day to become part of that day's list.

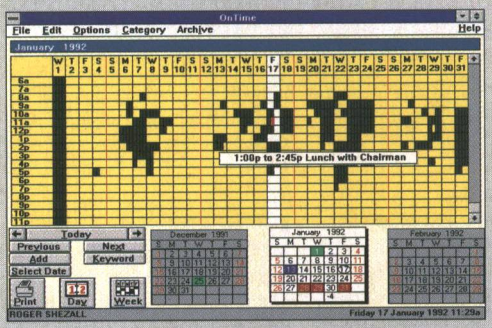
OnTime handles both business and personal messages and comes with four selectable categories: Appointments/ Meetings, To-Do Lists, Personal Items and Birthdays/ Anniversaries. However, up to 26 further categories can be created and these are identified whenever the to-do list is printed out.



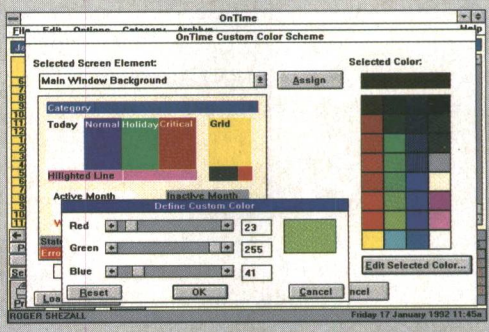

❑ ***The current week to view. Each grey square represents 15 minutes of allocated time. The current day is highlighted in white and the small, red rectangle indicates the current time slot***




❑ ***To select a past or future date just click on the chosen month and it will jump to the front. Click on the day you require which then appears ready for you to make an entry***




❑ ***The current month to view, By clicking on any of the darkened time blocks a message panel appears which identifies that appointment***




❑ ***OnTime for Windows can be readily customised. This dialogue box allows you to choose and mix your own colours for each element of the screen***

As your appointments start to fill up you can get an overall picture of your commitments for either a week, or a month, simply by clicking on the appropriate button in the main screen.

A grid appears representing the period you have selected, showing individual days with shaded blocks for appointments. Move the cursor over any one of these blocks and click to reveal a text panel describing the details and duration of that appointment. This is actually a very slick and effective function which, with the single day display, forms the heart of the system.

Now let's suppose you are an incredibly busy person. You have lots of entries and you can't remember the date when you're supposed to be having lunch with your client, Smithers. You could display the month then click on each time block until you found it, but that is not in the spirit of good time management!

Use the Keyword search function and, by typing in your client's name, you will be instantly presented with a list of dates, times and details for that name.

FOLD

**Birthday/Anniversary**
Friday 17 January 1992

| | | |
|---|---|---|
| 30/01/92 | Richard's Birthday | [13] |
| 03/02/92 | Mum and Dad's Wedding Anniversary | [17] |

**TODO - List**
Friday 17 January 1992

| | |
|---|---|
| TODO | Buy Golf balls for tomorrow's game |
| TODO | Collect wine for the weekend. |
| TODO | Expect call from Belfast office |
| TODO | Get Building maintenance to repair broken office window |
| TODO | Get Garage to check jammed tape player |
| TODO | Personnel should let me know about extra sales staff today |

**Friday**
**17 January 1992**

**ROGER SHEZALL**

December 1991
Su Mo Tu We Th Fr Sa
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31

January 1992
Su Mo Tu We Th Fr Sa
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31

February 1992
Su Mo Tu We Th Fr Sa
1

June 1992
Su Mo Tu We Th Fr Sa
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30

July 1992
Su Mo Tu We Th Fr Sa
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31

August 1992
Su Mo Tu We Th Fr

**Appointment/Meetings**
Friday 17 January 1992

| | |
|---|---|
| 8:30a | Car in for 20000 mile service |
| 9:30a | Ray and George - costings for new product launch |
| 10:00a | R & D meeting - check production models |
| 11:00a | Phone Dusseldorf office |
| 12:00p | Sally and Kay to discuss photography brief |
| 2:00p | Planning group meeting for new product launch |
| 5:00p | Collect car fromWebsters Garage |

❑ ***Sample print-out of your appointments schedule***

## Displaying schedules

NOT only can any and all of the data in OnTime be easily accessed onscreen, it can also be printed out in a wide variety of formats for slipping into briefcase or pocket.

OnTime can be configured in any way that best suits your style of working. Screen display colours can be edited and mixed to your taste, different type sizes are available and the default contents of the opening screen can be changed. Perhaps you would like OnTime to open with the current month, or current week, rather than today's list?

This flexibility in use is one of the attractions of a package which has obviously been very carefully put together to provide maximum usefulness. The only drawback as far as I can see is that OnTime is strictly a one-person calendar system.

There is no save-as option to create calendars for different individuals. This is not a problem if you have your own PC, but could limit its appeal to, say,

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# windows SHAREWARE

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**ikonWORKS** regularly sends out a Newsletter/Catalogue to all customers. It has lots of hints and tips on getting the most from Windows shareware. We have liberally illustrated the catalogue with screen shots to help you choose software which is best suited to your requirements.

### FREE UPGRADES

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PC Today

secretaries who maintain the diaries of more than one executive or, perhaps, a sales manager who might want to track the whereabouts of individual members of his sales team.

Of course, an essential feature for any time management system is that it should be easy to use and in this respect OnTime scores very highly.

It takes just a few minutes to learn the basics, and the manual – a slim volume with less than 50 pages of instruction – is well laid out and concisely written.

## Conclusion

ONTIME could be useful to anybody who leads a busy lifestyle with a variety of daily tasks and commitments. Managers and executives of every kind, secretaries organising their bosses and sales people could all benefit from the wide range of functions and the crisp, clean displays offered by the program.

The print-outs could be handy for people on the move, and OnTime is a natural for a laptop, palmtop or other portable PC. At £130, however, these functions certainly don't come cheap. But if time is money to you, you may consider this to be money well spent.

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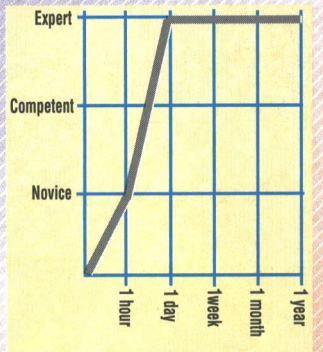
**ONTIME For Windows has powerful printing capabilities, enabling you to produce a variety of reports from a simple list of today's appointments to a calendar of up to seven weeks, including your daily to-do list, upcoming events and Today's Agenda, all on a single piece of paper.**

**The layout of the last item, the Trifold Print, is designed so that the printed sheet folds neatly into three sections, becoming a portable, up-to-date planner. And when you are away from your PC you can pencil in new appointments straight onto the printout.**

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## PC TODAY PROFILE

**Product: OnTime for Windows**
**Price: £130**
**Supplier: KCG Software, Suite 6 Innovation House, 6 Seymour Court, Tudor Road, Manor Park, Runcorn, Cheshire WA7 1SY**
**Tel: 0928 579199**




### FOR

**Looks good and is very easy to use. It has comprehensive range of functions.**

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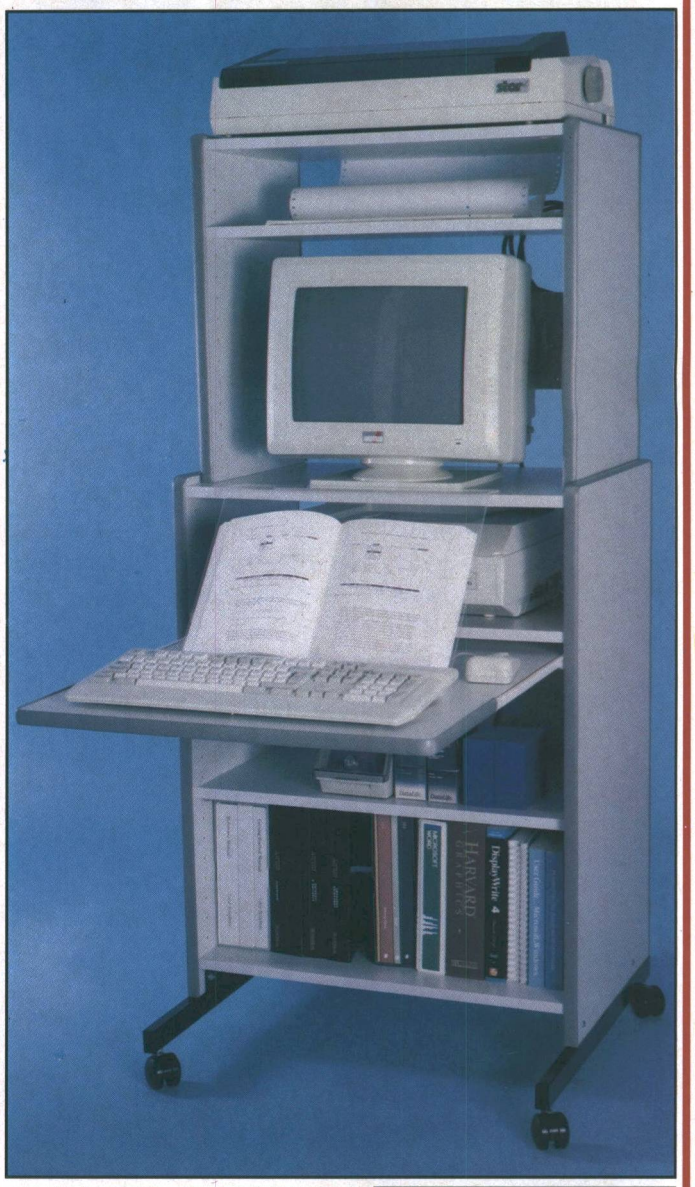
**In practical terms, it is limited to only one user.**

### TECH SPEC

**Technical support: Free telephone hotline**
**Hardware: 286 PC, 2Mb ram, hard disk, Windows**

| | |
|---|---|
| Ease of use | ❑❑❑❑❑ |
| Functionality | ❑❑❑❑ |
| Documentation | ❑❑❑❑❑ |
| Value | ❑❑❑❑ |
| Overall | ❑❑❑❑ |

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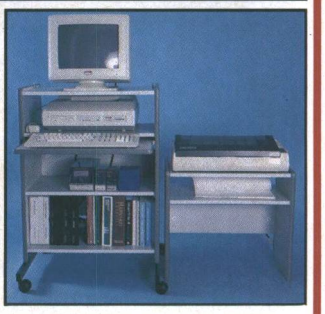


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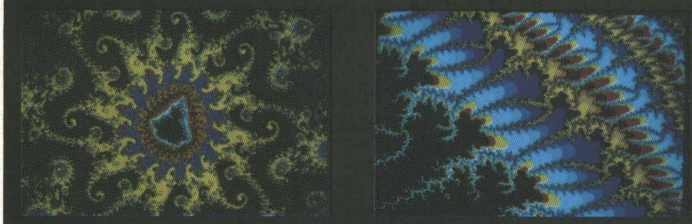
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# TRAINING

## Excel-ent training package

THERE is often less of a need for training with Windows-based software because of the extensive online help, common user interface and so on.

Many functions are the same no matter what program you are running. For instance, to save a file you select the File menu and the Save option.

Although you may be able to work out the basic functions of an application you may not be using its full resources by sticking to the obvious menu options.

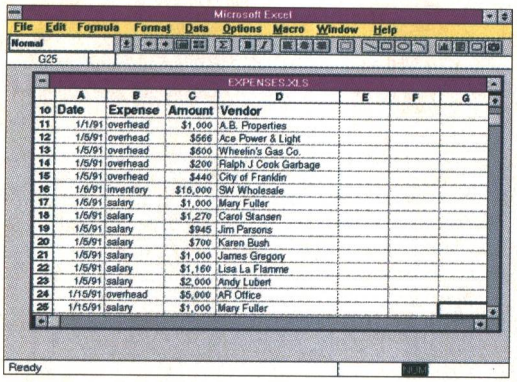
This is where good training material comes in handy as it can take you beyond the routine operations and transform you from a novice into an expert. Well, that's the theory, anyway.

Business Numbers claim they have the solution to your spreadsheet difficulties in the form of a computer-based tutorial package consisting of Master Excel by Pictures, Excel Quiz-master and Master Excel.

The first package, Master Excel by Pictures, consists of an A4 ring-bound manual – no software is provided and you must already have Excel and Windows installed on your computer.

The design and layout of the material is fairly consistent and on each page is either one or two screen shots of Excel along with a small amount of text telling you what to do next.

You start by learning how to move around the worksheet and then enter your first formula. Next you build a typical sales budget and invoice, and draw graphs of the information. You can then print out the worksheet you have constructed.




| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 10 | Date | Expense | Amount | Vendor | | | |
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| 16 | 1/6/91 | inventory | $16,000 | SW Wholesale | | | |
| 17 | 1/5/91 | salary | $1,000 | Mary Fuller | | | |
| 18 | 1/5/91 | salary | $1,270 | Carol Stansen | | | |
| 19 | 1/5/91 | salary | $945 | Jim Parsons | | | |
| 20 | 1/5/91 | salary | $700 | Karen Bush | | | |
| 21 | 1/5/91 | salary | $1,000 | James Gregory | | | |
| 22 | 1/5/91 | salary | $1,160 | Lisa La Flamme | | | |
| 23 | 1/5/91 | salary | $2,000 | Andy Lubert | | | |
| 24 | 1/15/91 | overhead | $6,000 | AR Office | | | |
| 25 | 1/15/91 | salary | $1,000 | Mary Fuller | | | |

❑ ***You'll need to have already installed Excel to follow the training course – a series of screen shots with printed instructions***

The Excel Quiz-Master uses a slightly different format. It is still very pictorial, but instead of instructions saying do this or do that, it asks how you would do a particular task. Two or three possible alternative answers are given and you tick the correct one in the manual.

It's quite easy to learn by trial and error – first try one answer and then the other, and see which works. The correct answers are printed at the end of each chapter.

A floppy disk is supplied with the final course, Master Excel, and this contains a series of tutorial files that are loaded into Excel. Like the first course, you follow a series of screen shots and instructions, but instead of creating simple worksheets you are provided with ready-made ones that you can experiment on.

In many ways, the material covered is very similar to Master Excel by Pictures and it is just presented in a different form. Some parts are different, but there is a lot of overlap.

### PROFILE

**Product: Master Excel by Pictures**
**Price: £91**
**Product: Excel Quiz-Master**
**Price: £59**
**Product: Master Excel**
**Price: £69**
**Supplier: Business Numbers, 3 Duchess Road, Clifton, Bristol BS8 2LA**
**Tel: 0272 730475**

## Perfect macro tutorials

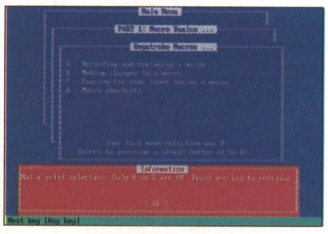
THE world's best selling wordprocessing package, WordPerfect, is well known for its huge range of features, and also for being a bit awkward to use.

Many users have not progressed beyond the basic facilities because of the program's complexity and enormous manuals – have you read them from front to back?

This is where Macro Perfect steps in, because although it doesn't really tell you anything you couldn't find in the documentation, it does it in a more easily accessible manner.

The subject of this training package is specific to just macros. Instructions and explanations are displayed on the screen, there are many examples to watch and exercises to try.

The software is menu driven and you don't need WordPerfect to run it. Lessons range from beginner to advanced and each contains quite a good explanation of the procedures you are going to learn.



❑ ***The Macro Perfect menu screen with Part 1 lesson options***

Exercises are quite cleverly programmed. The top half of the screen shows what WordPerfect looks like – a simulation – while in the lower half are the instructions. You are told which keys to press and when WordPerfect prompts you for a menu selection or action there, Macro Perfect tells you what is expected of you in the bottom half of the screen.

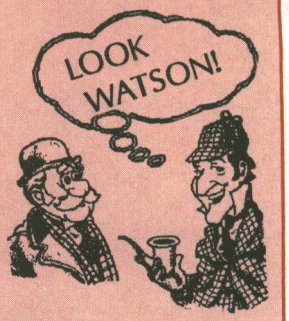
It is quite a simple idea, but it works well. At under £50 it represents reasonable value for money for someone who finds the manual incomprehensible and it will have you creating macros in no time at all.

### PROFILE

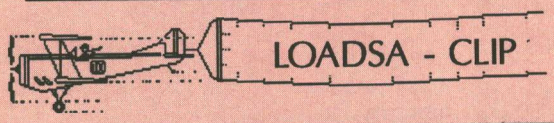
**Product: Macro Perfect**
**Price: £40.85**
**Supplier: Periander, Gracefield House, Melfort Gardens, Kilbarchan PA10 2DB**
**Tel: 05057 5138**

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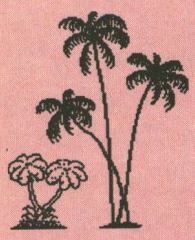












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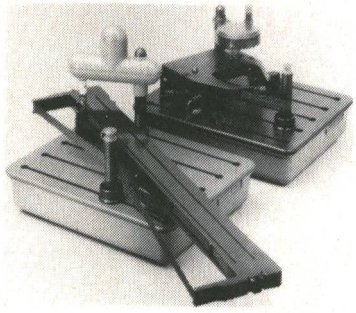
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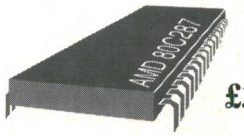
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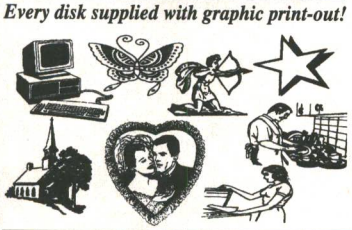
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MR LABEL (1) New label making program.
LASER LETTERHEAD PLUS (2) Uses HP fonts & PCX picts.
POOLS NUMBERS SELECTOR (1) Football Pools selection
VIRUS CENTRAL (1) Menu driven system for McAfee's tool.
WINDOWS 3 CONFIG. GUIDE (1) Correctly install Windows
WINDOWS GAMES #4 (1) 7 solo games.
WINEDIT (1) Text editor for Windows programmers.
WORLD WAR II (1) Big Three- very detailed game.
ARCTIC ADVENTURE (1) Search for Viking treasure.
DESERT STORM (1) Slide show info of the Gulf conflict.
JUMPMAN LIVES (1) (EGA) Up to four player arcade game.
ZZT (1) Addictive problem solving game.
ASTRO-HEALTH (1) Vitamins/Minerals for Astological signs
HORARY HELPER (1) Horary astrol. for day, time & place.
SHOWPARTNER LITE (2) Creates superb presentations.
EXECUTIVE DIRECTOR (2) (HD) DOS shell/file manager.
DISKTREE (1) (HD) Friendly front end for DOS.

### WORD PROCESSING

PC TYPE 4 (4 discs)(HD) Latest version from Buttonware.
GALAXY LITE (1) Wordstar compatible/drop down menus.
THESAUR PLUS (1) (HD) Good pop-up, use with your w/p.
STYLE CHECKERS (1) Checks the readability of text.
SIGNSMITH (1) Create letterheads/posters/logos/pics.
LQ (1) Dot Matrix print enhancer, fonts, print-spooler etc.

### DATABASE MANAGEMENT

PC FILE 5 (3 discs) (HD) Powerful D/Base III compatible.
FILE EXPRESS v5(4) Powerful, but easy to use.
FREEFILE (1) Easy to learn menu-driven database.
ZEPHYR (2) (HD) Easy to use fully relational D/Base.
WAMPUM (1) Fast, fully relational. Great Value!
CLUB (1) UK club membership program.

### INTEGRATED PROGRAMS

ALT (1) (HD) Editor/ calculator/ address book/ calandar etc.
FRIDAY (1) (HD) Super pop-up Organiser/ diary/ notebook.
ACTIVE LIFE FOR DOS (2) Calendar, appointments, dialler.

### PAINTING/DRAWING

FRACTAL GRAFICS (1 disc) PCX drawing using Fractals.
VGA PAINT (1) Excellent VGA graphics/drawing program.
DESKTOP PAINT (1) (HD) (EGA or Hercules) Superb B/W.

### DESIGN

CHARTS UNLIMITED (1 disc)Flowcharts/electrical/Gantt etc
EASYDRAW (1) Technical drawing, flowcharts, diagrams.
DRAFT CHOICE (1) Accurate, easy to use CAD program.
PC-DRAFT II (1) Full A4 150 dots per inch drawings.

### GRAPHICS UTILITIES

GRAPHIC WORKSHOP (2 discs) (HD) Converts/scales/ views/dithers andprints many picture formats.
ICONVERT (1) Converts many formats + screen preview.

### SPREADSHEETS

AS-EASY-AS (1 disc) Famous 123-style spreadsheet.
TUTOR 1-2-3 (1) Interactive tutorial for 123 beginners.

### CLIP ART

OFFICE IMAGES (1 disc) Light hearted, choose PCX or MAC.
COOPER SET (2) 1500 pictures. Choose: PCX/IMG/MAC.
DECORATIVE DROPCAP (1) Decorative capitals in PCX /IMG

### BUSINESS

LEADMASTER (1 disc) (HD) Complete sales office system.
MANAGEMENT TRAINING (1) Thorough training program.
BUSINESS LETTERS (3) 600+ letters in ASCII format.

### FINANCE

FREEWAY CASHBOOK (3 discs) Profit & loss/VAT/bank rec.
PAGE FINANCE CONTROL (2)(HD) Leading finance package
FREEWAY LEDGERMASTER (4) Major integrated system.
HOME FINANCE MANAGER (1) Keeps your home accounts.

### DOS UTILITIES

MCAFFEE VIRUS TOOLS (2 discs) Anti-virus programs.
POWERMENU (1) (HD) Friendly menus, easier than DOS.
AUTOMENU (1) (HD) Run programs with single keystrokes.
PC DOS HELP (1) Highly rated DOS tutor/detailed refs.
PKZIP/PKUNZIP (1) Fast and efficient archiving program.
PKZMENU & PKLITE (1) Two utilities for PKZIP.
HYPERDISK (1) (HD) Disc caching to speed up your system.

### PROGRAMMING

C TUTOR (2 discs) Excellent tutorial with examples.
PERSONAL C COMPILER (1) Best shareware compiler?
A86/D86 (1) Fast Assembler/debugger.
8086 TUTOR (1) Intro to Assembly language programming.
TURBO PASCAL TUTOR (2) Very good tutorial.

### HOBBIES & INTERESTS

FAMILY TREE (1 disc) Prints charts or book with index.
BROTHER'S KEEPER (4) Friendly. Prints sideways charts.
SOLVER (1) Crossword, anagram & word square solver.
FOOTBALL FORECAST (1) Popular pools/fixed odds system.
PUNTER'S PAL (1) UK Horse racing analysis program.

### GAMES

SOCCER GAME (1 disc) Get your team to the First Division.
GOAL (1) International soccer management.
PC PRO GOLF (2) Golf simulation. Quite good CGA graphics.
GRAND PRIX (1) Manage a Formula One team.
FORD SIMULATOR II (2) Test drive a Ford car!
INSANITY (1) Fantastic maze game. Needs colour.
DRACULA IN LONDON (1) Good graphic adventure game.
GET LUCKY (1) Collection of harmless (18+ only) games.
SLEUTH/HANGMAN (1) Find the murderer!
BACKGAMMON (1) Plus Cribbage & Draughts. Very good!
POWERCHESS (1) Super chess game. Works on all graphics
CASTLE MASTER (1) (CGA) Rescue your twin.
PHAROAH'S TOMB (1) (CGA) Raiders of the Lost Tomb.

### EGA/VGA GAMES

VGA SHOOTING GALLERY (1 disc) 7 shooting competitions.
EGA ARCADE (1) 6 games including Mazewar & Shuttle.
EGA MAHJONGG (1) Super graphics, can design your tiles.
CUNNING FOOTBALL (1) American football sulation.
DARK AGES (1)(286) Supports AdLib/Sound Blaster cards.
GLOBAL WARFARE (1) UK written, RISK-type game.
COMMANDER KEEN (1) One of the best ever PC games!

### EARLY LEARNING

HOORAY FOR HENRIETTA (1 disc) Maths for 5-12 year olds.
HENRIETTA'S BOOK OF SPELLS (1) Spelling for age 7-14.
AMY'S FIRST PRIMER (1) Pre-school educational games.
PC LEARNING GAMES (4)(EGA) Maths, Words etc (2-8yrs)
ANDY'S WORD GAMES (1) Improve spelling & grammar.
FUNNELS & BUCKETS (1) Games for age 2 to 10.
MONKEY BUSINESS (1)(mouse) Interactive story (age 7-10)

### EDUCATION

PC TUTOR (1 disc) Good interactive computer tutorial.
TYPING TUTORS (1) Good tutors- PC TOUCH & FASTYPE.
GCSE (1) Choose Maths, Science, Physics, Comp. Studies.
WORLD MAP 2.9 (1) Draws global maps - fascinating!
FRENCH TUTORS 1 & 2 (2) Multiple choice tests.

### LIFESTYLE

HOROSCOPE/ASTROLOGY (1)Prints star Chart & analysis
HANDWRITING ANALYST (1) Thorough graphology program

### MS WINDOWS PROGRAMS

WINDOWS GAMES (1 disc) 12 games, Poker, Yacht etc.
SCREEN PEACE (1) Set of screen saver programs.
ICON TOOLS (2) Let you edit, draw, view Icons.
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ORGANISE (1) Personal information manager .
WINCHESS (1) Very good chess game.
WIDOWS ALMANAC (1) Calendar. notepad, alarm etc.
WINDOWS WALLPAPER (2) 18 pictures for your desktop.
PAINT SHOP (1) Converts between BMP, PCX & GIF.
BIGDESK (1) Increase the working area of your desktop.
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# SHAREWARE SAFARI

**Choosing the right word processor for your PC is a difficult decision. Shareware Shopper's James Tye provides a couple of pointers**

**THERE'S no doubting the popularity of word processing in the computer world.**

**The multitude of available packages is a testament to the ever-increasing number of users who find it an invaluable tool in the home and business environment.**

**The sales volume of commercial word processing packages is echoed by the number of available shareware programs.**

**Of all applications, word processing presents the buyer with the most difficult decision – which one to choose.**

**Although shareware can be evaluated before purchase, choosing two or three to try from the many on offer will save time and money.**

**In this month's Safari I'll be looking at two popular shareware word processing programs that claim to offer all the text manipulation facilities you need.**

## Freeword: Simple, but cumbersome text editing

FREEWORD has been around for quite some time and has found its way into the catalogues of a large number of shareware libraries. Requiring only a parallel printer, 256k ram and a single floppy disk drive, it will be happy on even the most basic of PC setups.

Initial impressions are of a package that makes very few concessions to ease of use. All the options available are listed in a box at the bottom of the screen. With the choice limited to only 11 functions, Freeword certainly isn't a feature-laden wordprocessor.

The editing area is completely controlled by the cursor keys. Combining these with the Control and Home keys will move the cursor to the end of a line, paragraph and so on.

For a keyboard-based package, it performed poorly. The repeat rate was unresponsive making large deletions using the Backspace key, impractical. It also makes marking blocks tiresome as this function is also controlled by the cursor keys.

Inserting and overwriting is also more cumbersome than with most packages as the text is not automatically reformatted when changes are made. The alterations are either updated as the cursor is moved on or by using the redisplay command. This is ostensibly a reformat.

Other functions suffer from poor implementation. Cutting, copying and pasting blocks is more of a file handling operation because blocks of text can't be stored in memory.

One of Freeword's highlights is its file handling facilities. Offering a directory view from which files can be loaded and deleted, it only needs a rudimentary knowledge of the Dos directory system for users to load and save documents.

One problem encountered was the time the program took to read in a new document. This was not due to slow disk access, but the fact that Freeword actually clears the whole memory before loading.

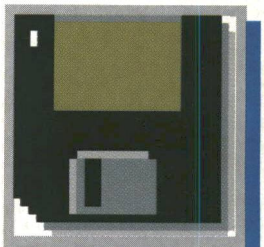
The help screens (14 in total) aren't context sensitive, but do provide basic explanations of the functions on offer. Online documentation is better. Covering all the functions in detail, it is supported by examples and a clear writing style.

If Freeword has a point in its favour, it is its simplicity. This results in a wordprocessor that is instantly accessible, especially to an inexperienced first time user. However, anyone who has tried a more modern word processing package will find it limited, slow and cumbersome.

I find it difficult to recommend this program, even for the price of a shareware disk. Its scant functionality and limited user interface are too basic for me, but if you are new to word processing it might be worth a look.

```
MAIN MENU:  Help   Block   Directory   Load file   New page    Print
            Quit   Find    Redisplay   Save file   Typewriter
Insert Mode                472024 free          Page 1  Line 1  Col 10
```

❑ ***The sum total of available options in Freeword***



**When purchased, Freeword will be compressed to fit on a single disk. To run the program, it will have to be decompressed on to a floppy disk or a hard drive.**

```
******MARCH SHAREWARE SAFARI******

@sh = Choosing the right word processor for your PC is a difficul-
t decision. Shareware Shopper's James Tye provides a couple
of pointers.

*****INTRO*****
THERE'S no doubting the popularity of word processing in the
computer world. The multitude of available packages is a testame-
nt to the ever-increasing number of users who find it an invalua-
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     The sales volume of commercial word processing packages
is echoed by the number of available shareware WP programs.
Of all tools, word processing presents the buyer with the
most difficult decision (200) which one to choose. Although
shareware can be evaluated before purchase, choosing one or
two from the many on offer will save time and money.
     In this month's safari I'll be looking at two shareware
word processing programs.
*****END INTRO*****
```

❑ ***Freeword presents a bland image to any user. Text editing is also hampered by the poor keyboard repeat rate***

## PROFILE

**Product: Freeword version 1.0**
**Registration: $49**
**Rating: ★**

## New York Word: High on features, low on usability

WHEN first run, this program could easily be mistaken for a text editor. It offers no more than a spartan editing area and a line of information, presenting an inaccessible face. For the newcomer to word processing, it would be a worrying and unhelpful sight.

However, the package is certainly worth persevering with because underneath its bland exterior is a whole host of useful functions and features that would be boon to any WP user. In fact, there are several extras which can't be found on some of the heavyweight commercial packages.

The accompanying documentation covers the extensive features found within the package. One major oversight of the manual is the omission of page numbers, which makes searching for topics a chore.

Full pull-down menu support can be accessed with the Alt+M combination. The options are divided into 12 categories, which can be accessed by the cursor keys. Mouse support is not included.

The editing area is navigated using the cursor keys with a selection of hot-keys to move the cursor to the end of a line, the bottom of the document and so on. Moving and copying blocks of text is accomplished using a system similar to that of WordStar or WordPerfect. This is enhanced by a number of powerful features including a Mark Until function that marks a block up to a specified character.

A number of the features are aimed at producing longer documents and reports. These include footnote facilities, a table of contents generator and indexing features.

Macro functions are also included which enable sets of keystrokes to be recorded and replayed to perform functions or insert blocks of text. Although this doesn't offer a macro programming language as such, it will be powerful enough for most day-to-day applications.

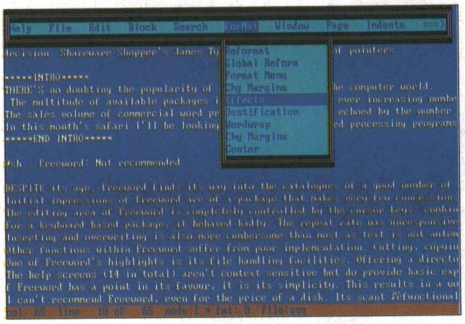
The pop-up calculator included with New York Word is one of the more disappointing features. Offering only a text interface and few clues on how to use it, it looks like a feature that has been tacked on as an afterthought.

The traditional functions of a wordprocessor haven't been overlooked by the author. Text formatting, encompassing margins, tabs and justification, has been thoroughly implemented allowing a wide range of styles to be applied. A spell-checker is also included.

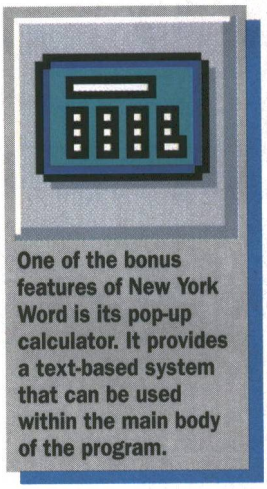
The configuration options New York Word provides are sufficient to both tailor the program to your system and enhance the user interface. If you have a colour display, replacing the monochrome editing area with blue and yellow should come fairly high on a list of priorities.

Printer support is adequate, offering a selection of 25. This ranges from the most basic Epson to a Laserjet.

New York Word is a full featured package which will satisfy the needs of most users. Its major problem is the sacrifices it has made in usability. Just about every feature, from configuration to spell checking, is implemented with text-based control, never the cursor keys. The novice will find this difficult to learn, the experienced user will simply find it awkward.



❑ ***New York Word provides a comprehensive set of features. All are easily accessible from pull-down menus***



**One of the bonus features of New York Word is its pop-up calculator. It provides a text-based system that can be used within the main body of the program.**

### The marketplace

WORD processing is a difficult area for shareware. The competition is heating up in the commercial market bringing down the prices of even the latest releases. Although shareware offers users a strong collection of packages, the prices simply aren't as competitive as they are in other areas of computing. The main advantage for the user is the opportunity to evaluate the product before a purchasing decision is made.

Wordprocessing is often a day to day function and choosing the right package first time around will save much time and money. Try before you buy has to be the motto.

### Spoilt for choice

**WITH a wealth of shareware word processing on offer, don't restrict yourself to evaluating just one product. There are several packages worthy of mention that shouldn't be ignored.**

**Word Fugue, reviewed in the January *Shareware Safari*, is a sound choice. PC Write Lite and Galaxy Lite are two other high quality shareware offerings.**

**These three, as well as New York Word, should certainly be on your shortlist.**

### PROFILE

**Product: New York Word version 2.2**
**Registration: $54**
**Rating: ★ ★ ★**

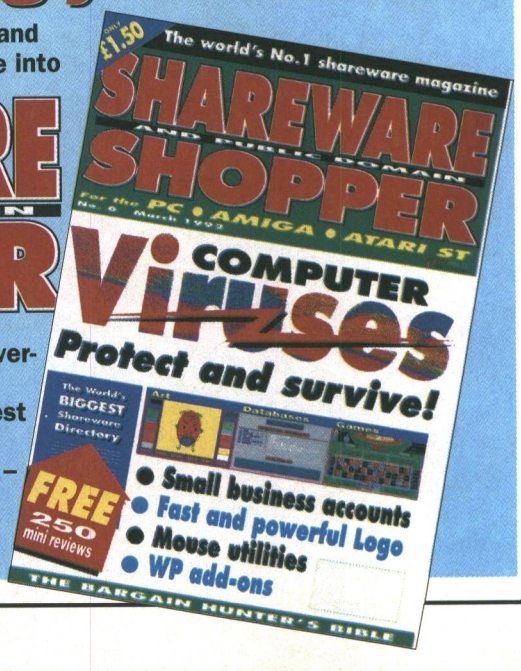

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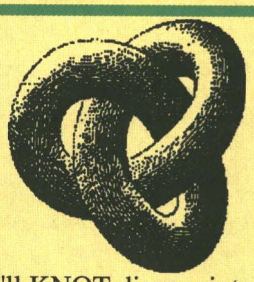
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NAV041C windows 3 navigator
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TERMITE termites all over the screen (funny)
WINPOKER poker game
PIXFOLIO image viewer and catalogue manager
PAINTSHOP win3 graphics viewer
WINFRA30 fractal's program
WNEKO103 a cat following your mouse
ICONS a selection of 453 icons
ICON MASTER complete icon utility

## WORD PROCESSING

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GALAXY word processor VG!!
GALAXY LITE text/word processor
JOVE an EMACS like editor (2 disks)
CHIWRITE a very good WYSIWYG word processor
MINDREADER excellent AI word processor (2 disks)
NEW YORK WORD word processor-editor VG! (2 disks)
PC WRITE word processor (3 disks)
BLACK MAGIC hypertext package (4 disks)
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KNOWPRO hypertext system (3 disks)
SHARESPELL text file spelling checker 112,000 dict

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CARDFILE a simple and easy card index type database
FILE EXPRESS excellent database program (2 disks)
FREE BASE free from database program
WYNFIELD excellent database mouse or key control powerful

## GAMES

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SHOOT very addictive mouse + vga fairground rifle range
VGA Mahjong Chinese tile game
MARIO vga close copy of Mario brothers game lots of fun
FORD SIMULATOR driving simulator (2 disks)
BANANOID excellent arkanoid type game vga
SCRABBLE the board game
FRAC2 3d tetris type game vga
DUKE NUKEM arcade adventure excellent
J-JIM ver 2.4 very good adventure game
RICK DANGEROUS playable demo brilliant
SHERLOCK a game of logic and deduction ega/vga
DANGEROUS DAVE multi level vga game
EGAINT ega tetris like game
RAMP-CUBE catch and place the falling cubes ega
TURBO CHESS good chess game
OTHELLO multi level board game
BLACK JACK up to six players
POKER ega/vga

## SPREADSHEETS

ALITE powerful spreadsheet with graphics
AS EASY AS the 123 spreadsheet clone
INSTACALC pop up spreadsheet
123wrks lots of worksheets for 123
EZ very easy to use spreadsheet and powerful

## EDUCATIONAL

ADD TEST addition problem screens for kids
AMY'S FIRST PRIMER 6 programs to learn children pre-school age (1 disk)
CATCH88 simple program to help kid's learn to type
ANIMAL's children's counting program
CIBOX good maths educ game for 3-6 C/G required
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FUNNELS educational math's game (very good)
HANGMAN4 educational hangman
KIDGAMES collection of educational games (1 disk)
LETTERFALL fun way to teach kids to type
MATHMAZE educational math's game
MATHSHOP a good way to learn math's
MATH CASTLE math's based adventure game
NUMBER 123 maths teaching game pre school onwards
SPELLBEE spelling exercise
TEACH TOT for 3-6, numbers, letters, shapes
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PAGE financial controller 2 disks
PAYROLL freeways payroll package 3 disks
SISC sales invoice and stock control
STOKTRAX3 stock tracking program
MORTGAGE PLAN mortgage calculating program

## HOBBIES

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POOLS the latest version
MEDIC test your sexual IQ
TAROT a tarot card reader
CRYSTAL BALL predict the future
WEATHER weather forecasting program
E.S.P. test your esp

## PROGRAMMING

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PASCAL TUTOR 2 part tutor 2 disks
TURBO PASCAL TUTOR TURBO LESSONS 2 disks
TURBO PASCAL ROUTINES useful routines 4 disks
WIN BOSS 7 disks of 'C' routines for windows
C TUTOR learn 'C' 3 disks
C-TUTOR 12 lessons 2 tests & tutor docs
GNU C compiler includes source for libraries
PCC personal c copiler ver 1.2

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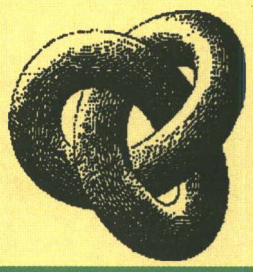
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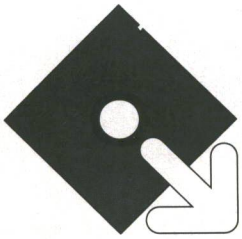
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# PC tips

**Two top tips provided by PC Today's team of experts should provide welcome help**

## Trash those files

Have you ever accidentally deleted a file and then immediately wished you hadn't? Well, here's a simple batch file utility to solve your problems. First you must create a directory called DUSTBIN – just type CD \DUSTBIN.

Now you must create a short batch file using the commands:

```
COPY CON TRASH
@ECHO OFF
COPY %1 \DUSTBIN
DEL %1
```

After typing in the last line press Control+Z and Return. The best place to store this file in in the Dos directory. Now instead of typing DEL to delete a file, type TRASH. The file isn't lost, but is moved to the dustbin directory. Once a week, say, you could browse through the dustbin and delete anything you really don't want. However, you can also pull out accidentally deleted files.

## MSdos redirection and piping

MANY users know about the MSdos redirection and piping facilities, but they are a lot more useful than you might imagine. They can transform your batch files into something that doesn't frighten a novice. But first a quick refresher.

A standard MSdos program writes its output to the standard Dos output device, usually the console, and reads its input from the standard Dos input device, again usually the console.

However, if you want to, it's quite simple to redirect input or output to any other MSdos device.

To redirect output you simply add *>device* to the end of the command line. Similarly to redirect input you have to add *<device* to the end of the command line.

For example:

```
DIR >PRN
```

sends the output of the DIR command to the PRN – printer – device.

As well as being able to redirect input and output to a device you can also redirect to a file and it is this feature that is so useful in batch files.

The basic idea is that any command that needs the user to supply input can be automated within a batch file using redirection.

For example, if you include the FORMAT command within a batch file it will ask three questions – whether it is OK to format the disk, what the volume name is and whether you want to format another. These questions might confuse a novice. The solution is to create a file that contains the correct answers to each of the questions and then redirect it to the FORMAT utility. If the file containing the answers Y for Yes, VOL as the volume name and N for "Format another?" is called ANS.TXT the command:

```
FORMAT A: <ANS.TXT
```

will format a diskette without asking any questions. ANS.TXT could be created with a text editor, but by redirecting the ECHO command the batch file can do the job itself. For example:

```
ECHO YVOLN >ANS.TXT
```

will write YVOLN to the file ANS.TXT. Unfortunately, this doesn't work as input to FORMAT because each answer should be on a separate line. There isn't any way to make a single ECHO command write more than one line to a file, but we can use redirection and append. If you redirect output to an existing file, it is deleted before the new information is written to it.

If you redirect to an existing file using >> it isn't deleted and the new output is added to the end. As each Echo command starts a new line you should be able to see that we can create the file required using:

```
ECHO Y >ANS.TXT
ECHO VOL >ANS.TXT
ECHO N >ANS.TXT
```

This technique of building a file of answers and then redirecting them into a command works in nearly all cases, but there is a simpler way if the command only needs a single line of input. The MSdos pipe command can be used to redirect the output of one program as the input to another. For example, *command1* | *command2* results in the output of *command1* becoming the input for *command2*.

To see how this can be used to automatically answer questions within batch files consider the command:

```
Erase *.*
```

This asks the question "Are you sure?", which is exactly what you want it to do when it isn't part of a batch file. To answer this question automatically without using an additional file simply use:

```
ECHO Y | ERASE *.*
```

which pipes the output of the ECHO command into the ERASE command and automatically answers Y to "Are you sure?"

As an final example of how redirection and piping can be used the Clone batch file listed alongside will copy floppy disks using a hard disk as an intermediary:

Notice the use of READY.ANS to supply the answers to the FORMAT command, the use of piping to supply the answer to "Are you sure?" and the use of redirection to the NUL device to suppress output from commands.

```
@ECHO OFF
CLS
ECHO Please insert the disk containing the data
ECHO that you would like to copy into drive A:
PAUSE
MKDIR C:\TEMP
COPY A:*.* C:\TEMP >NUL
ECHO.
ECHO Please insert a blank disk into drive A:
PAUSE
ECHO The disk in drive A: will now be formatted
ECHO This will destroy any data on it
ECHO Please check the correct disk is in drive A:
ECHO If you want to abort this procedure
ECHO press CTRL BREAK now or
PAUSE
ECHO Formatting disk and copying files - please wait
ECHO. >READY.ANS
ECHO CLONE >READY.ANS
ECHO N >READY.ANS
FORMAT A:
 NUL
COPY C:\TEMP A: >NUL
ECHO Copy complete, remove the disk from drive A
ECHO Y|DEL C:\TEMP\*.* >NUL
RMDIR C:\TEMP >NUL
DEL READY.ANS >NUL
```

*Clone: A batchfile to copy the contents of one floppy disk to another, using the hard disk as an intermediary*

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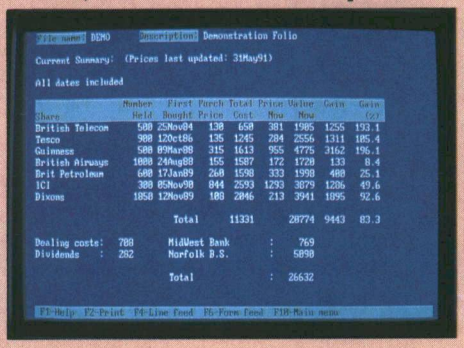
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+ Practise investing; learn without risking money

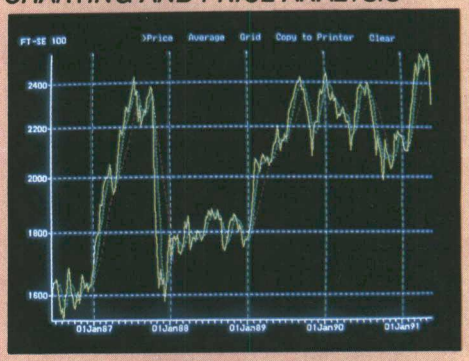
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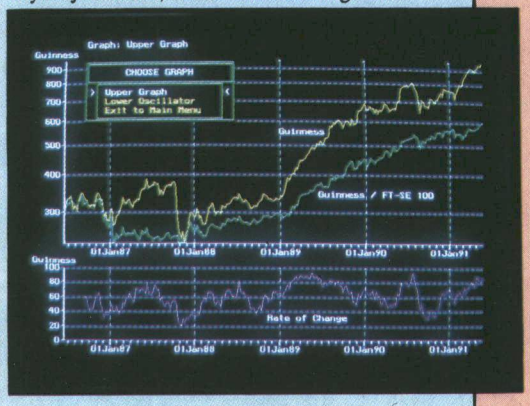
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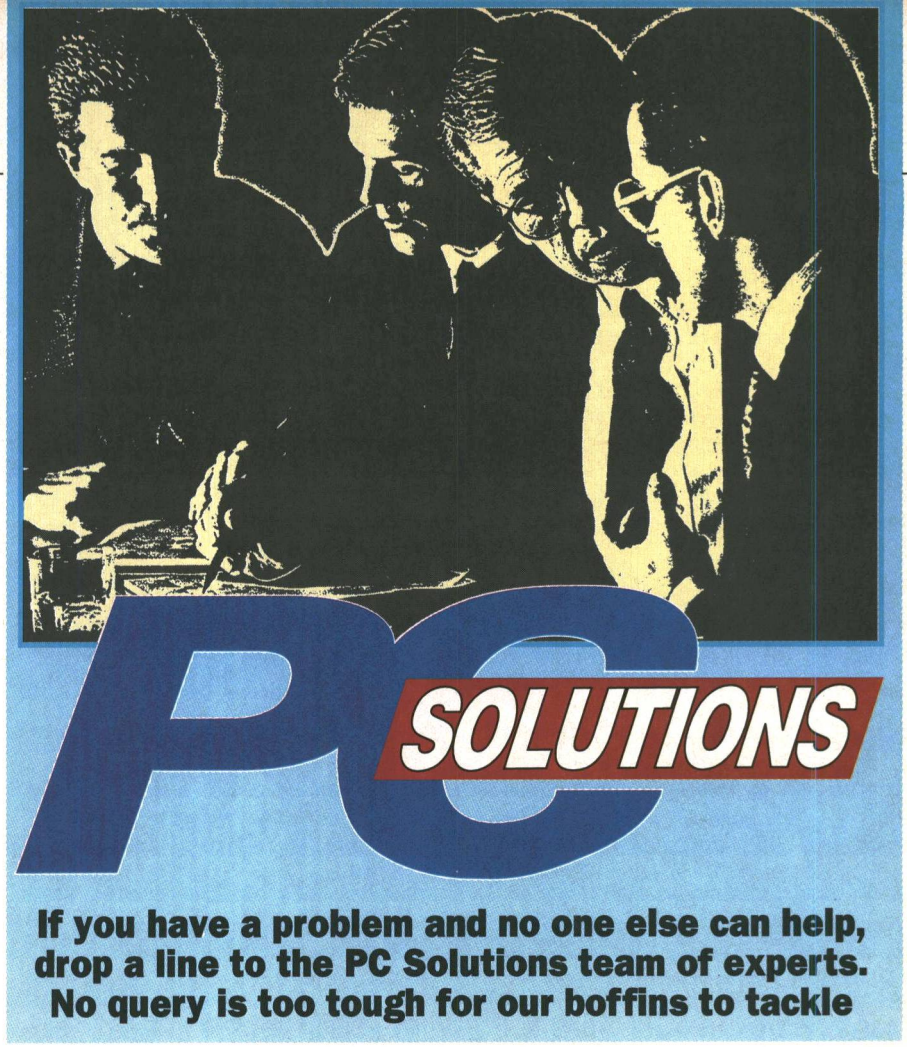
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## Spaced out

**Problem:** *I HAVE a PC that is now a couple of years old. At the time 20Mb hard disk drives were still being installed into bottom of the range machines – like the one I foolishly bought. I know the disk is far too small by today's standards because I am having serious difficulties upgrading to Windows. The problem is that when I install it on the hard disk there is so little space left I can't fit on any applications.*

*Are there any files that aren't essential to Windows? If so, which ones are they and will it be OK if I delete them to free up some space? How much more room will I gain? Of course, the best solution would be to upgrade the hard disk to a bigger unit, but for the moment, I'm broke and can't afford to do this. Are there any other (low cost) options open to me?* – **Clive Simpson, Blackpool, Lancashire.**

**Solved:** There are several files that you can delete to free up some space on your hard disk drive. First delete all the files ending .HLP as these are the help files and aren't necessary. Windows and the accessories will still run, but you won't be able to access the help option on the menus.

There are also several text files that explain various facilities in Windows. These aren't essential so it is safe to delete all the files that have a .TXT extension. You can also delete Reversi and Solitaire.

That lot should save you around 1Mb of disk space, and while it will certainly help a little, it won't really go any way to solving your problem. If you can't afford a new hard disk drive you could consider one of the disk compression utilities that have recently been launched on to the market.

Superstor is pretty good and fairly inexpensive. It is available on its own or as part of DR Dos 6 and will effectively double the capacity of your hard disk drive from 20Mb to 40Mb without having a significant effect on performance.

One other solution is to keep all your applications archived using either PKZIP or LHARC. This will save quite a lot of disk space, but the disadvantage is that whenever you want to use a program you will have to extract it from the archive.

## Dodgy disk

**Problem:** *I RECENTLY bought a hard card hard disk drive for my old XT compatible PC as I found I could no longer use it with the twin 5.25in floppies. At the same time I also bought Norton Utilities as I thought I may need its hard disk utilities, like the cache, optimiser, file recovery and so on.*

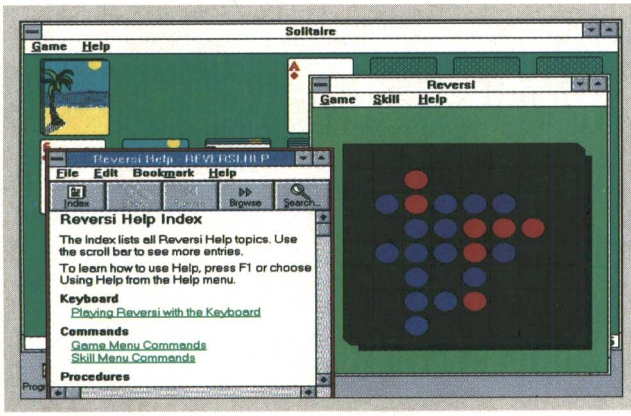
*Installing the hard card was quite easy to do and it was already formatted so I had little else to do. To ensure it was working OK before I copied all my applications and data files on to it I also loaded Norton Utilities and ran a check on the disk surface. To my horror Norton found that there were several defects on the hard disk and several thousand bytes that were unusable.*

*I immediately rang the supplier who sold me the hard card and complained that I had a faulty drive, perhaps it was an ex-demo model – and insisted that it be replaced at no cost to myself. However, the supplier tried to fob me off with a feeble excuse, saying that all hard disks had faults and that none were perfect. He refused to replace my hard card.*

*What do I do now? Surely I have the right to a replacement or a refund because the unit is clearly faulty, not fit for the purpose and so on.* – **Susan Derby, Chester, Cheshire.**

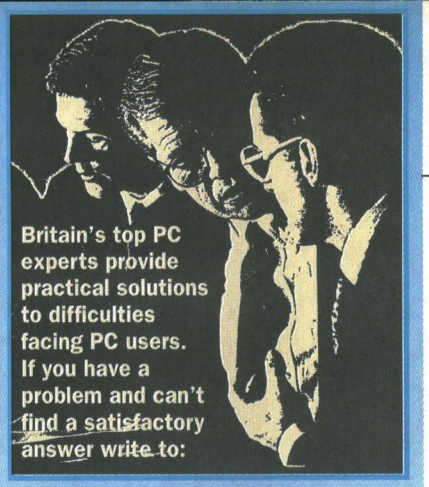
**Solved:** The supplier is right when he says that all hard disks are faulty, as most units are. It is very difficult to manufacture a perfect hard disk and frequently there are one or two small areas on the magnetic surface that are not up to the high standard required.

During the low and high level formatting procedures that are carried out when preparing a disk for use in a PC, these areas are mapped and locked out so they can't be used by Dos. This is to ensure that only the good areas are used for storing programs and data. Although there may be only one




*If you run Windows but have limited space on your hard disk, try deleting the help files and Reversi*

➤




bad sector, hard disks store information in 2k (or possibly bigger) blocks, so this could mean that over 2,000 bytes are unusable.

Don't worry about a new disk having one or two faults like this as they won't affect the way it works if it is properly prepared. What you need to watch out for is the appearance of new faults that might possibly occur at some time during the life of the drive.

## Disk swap dilemma

**Problem:** *I'm a long-standing subscriber to* ***PC Today*** *and read it from cover to cover every month. However, this is the first time I have felt the need to write seeking your advice. My problem concerns exchanging data on floppy disk with a colleague.*

*We both use 5.25in drives, but a recent upgrade of computer on my part has caused subtle incompatibility. All original disks formatted and used on my previous Tandon XT clone work fine on my colleague's machine, built by himself from standard parts.*

*They also read perfectly on my new AT class machine, despite having a 1.2Mb high density (HD) drive instead of the old 360k double density model. But once I have re-formatted these floppies they can no longer be read reliably on my friend's machine. I understand that there's some problem here between high and low density systems, but no-one seems able to give me an answer.*

*In addition, all floppies formatted or written to on my colleague's machine now totally fail to read on my computer, and yet disks from any other source, such as the master disks supplied with commercial programs, are perfectly readable.*

*We have cleaned the heads of our respective floppy drives, but to no avail. Please, have you any clues as to what is happening here?* – **Brian Whittaker, Cambridge.**

**Solved:** You pose two questions here, so let's take them in order. Firstly, the problem of compatibility between double density (DD) and high density (HD) drives – one physical difference is the number of tracks that each supports. DD drives are fixed at 40 tracks, but HD units can handle 40 or 80 tracks on the same sized media.

In fact, 40 track emulation on HD drives is achieved by double-stepping the head assembly. This means that track zero on both devices coincides, whereas track number one on a DD drive is actually track number two on an HD drive, two on DD is four on HD and so on. It sounds confusing, but the drive is intelligent and easily copes.

To squeeze 80 tracks in the same space as 40 the width of a track on the HD drive must be half that of the DD drive. When in 360k mode, the HD drive can't magically change the size of the head, hence the tracks stay thinner despite being more widely dispersed.

The result is that data written by an HD drive does not completely over-write any data previously laid down by DD units – it leaves a thin band of the original magnetic recording on either side of the written track.

No problem is encountered when reading back on an HD drive as these surplus data bands do not affect the smaller head size. But try reading on a DD drive and the wider head straddles the new track on either side, possibly resulting on a confused data signal.

If you want to transfer data from HD to DD drives, always start with a completely blank disk fresh from the box. Being unformatted, no previous data exists on the media. You can still experience difficulties, but they are a great deal less common.

As for the second problem, we have scratched our collective heads and can only come up with the one solution. Because both of your drives work fine with floppies from other sources, they must be within manufacturer's tolerances.

We can only assume that one is out of alignment by a certain amount in one direction, the other out by an opposite amount.

Should this be the case, the solution is for either one or preferably both of you to replace your drives or get them tuned by a specialist engineer. If at the same time your colleague upgrades to a high density drive, both of your problems will be cured.

## Better batch processes with MAKE

**Problem:** *I have been trying to locate a program for some time now to solve a particular problem. I need to perform some batch processing tasks which depend on the state of the file archive flag as set by MSdos whenever a file is changed. I have discovered a work-around using the ATTRIB and FIND utilities, but it is particularly complex and not suitable for quick changes to the batch file.*

*Is there any program which can return an ERRORLEVEL based on the state of a named file's attributes?* – **Simon Heath, Harrogate, N. Yorkshire.**

**Solved:** It is feasible that what you describe can be handled by a standard programmer's utility, although based on the time and date stamp of the file rather than its archive attribute. So long as two files exist for comparison, an old version and the updated one, a MAKE program will offer all you need plus a great deal more.

Even if you are creating an automatic back-up batch process where changed files are copied to floppy disk, you can mark the point in time of the last back-up by creating a dummy file and avoid the archive flag altogether.

MAKE works by reading a straight-forward text file within which are listed so-called targets and dependencies. It scans the list and if a target is older than any of its dependent files a sequence of commands are run.

These commands can be anything you would normally type at the MSdos prompt. MAKE also includes what are called macros for representing a complex block of text as a single name. These can then be substituted in commands for making any batch process more flexible.

Also included are default rules which describe how any particular file should be handled based on its file extension. Some of the more powerful MAKE utilities even allow for programming-like decisions to control batch flow.

Although intended for automating the creation of programs based on which source code files have changed, MAKE can be used for any purpose where a target file or files depend on the age of source files.

Example uses include backing-up, building large text files from discrete sections such as chapters in a book you are writing and general house-keeping tasks like moving all new files into the one directory.

Most programming language compilers are supplied with a MAKE utility. Another possible source is from shareware libraries and bulletin boards, an excellent example being the shareware program NDMAKE.

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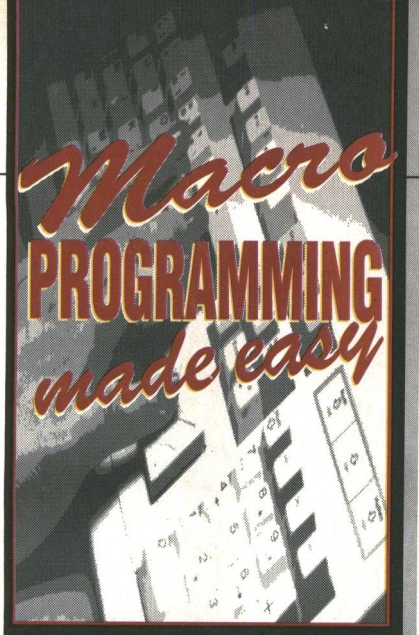
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Part 1: Keystroke macros – A general introduction
**Part 2: Practical keystroke macros – find out the extras needed to make keystroke macros really useful**
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## In the second part of her introduction to practical keystroke macros Janet Swift shows how to add up columns of figures

A SPREADSHEET is one of the most commonly used and valuable business applications, yet it is one of the most complex. It is quite straightforward to enter some figures and formulae to predict sales, manufacturing output, financial forecasts or whatever, and for many users this is as far as they have delved into the workings of the program.

However, spreadsheets have hidden facilities that are largely untapped by many people. By exploring the world of macro programming and introducing a few utilities available at the press of a key, you might be able to increase the efficiency of your worksheet and reduce your workload at the same time, with obvious benefits all round.

A macro is a little computer program typed into the spreadsheet written in a special language that it can understand. The language used by each spreadsheet is slightly different, but Lotus 1-2-3 and CA's SuperCalc are so similar we can treat them as the same and these two products are used for the examples here.

Last month, in part 1 of the series, I introduced the subject of macros within spreadsheets and we looked at a few simple ones. So you know how to record a keystroke macro, but now you have to find ways of putting it to good use. We discovered that even keystroke macros aren't just a matter of recording what you type.

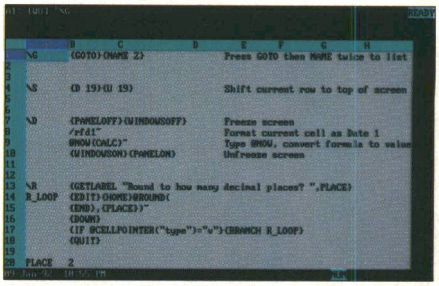
The basic idea of a keystroke macro is both obvious and easy. If you find yourself using the same set of keypresses over and over again you should convert them into a keystroke macro and save the trouble of typing them each time.

At this simple level it looks as though keystroke macros need no special skills or techniques because they are just recordings of what you would normally type. This is the way they are often introduced to beginners because it all seems so easy and straightforward.

It was, of course, exactly what last month's article did to get rid of the initial fear of coming into contact with anything as complicated as macros.

While this might be a good way of getting started, it isn't the whole truth and if you rush off and start to create keystroke macros with no other ideas in your head you will quickly find that you run out of keystroke macros to write.

If you have been struggling since last month's article and wondering what you have missed then I apologise... and here's the extra you needed to know!



*Macros written in Lotus 1-2-3*

## Too difficult a task? Never...

WHEN you are using a spreadsheet you are able to look at the screen and see just where an area of cells used for data starts and stops. If you want to apply a format to the data you can quite happily type the appropriate command and then use the cursor keys to outline the area you want to affect.

Now consider converting this action to a keystroke macro. What's the problem? Well, recording the keys that you press to get the job done just isn't enough. In this case you are looking at the screen and can see the area of data and use your intelligence to decide which cursor keys to press and how many times to mark out the data area.

If you record these keypresses you will have a macro alright, but it will always format exactly the same area of the spreadsheet. This might be useful once or twice, but a truly general-purpose macro – one you might use on a regular basis – should be capable of formatting any block of data.

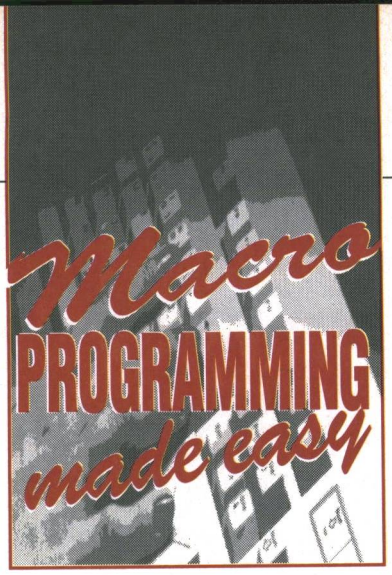
At this point you may decide that the task is just too difficult because to work out the area to be formatted obviously needs intelligence. Fortunately, this isn't true as soon as you know about the extended positioning keys.

When you first started using a spreadsheet you probably discovered that there are a lot of keys dedicated to positioning the cursor. Most of them aren't that useful in general use and so they tend to be forgotten. However, once you start writing macros you suddenly realise what these keys are for. For example, the End key allows you to find the end of a block of data automatically.

To see this in action all you have to do is start your spreadsheet running (this applies to SuperCalc, Lotus 1-2-3 and their look-alikes), type in a short list of numbers in column A, place the cursor on the first value in the column then press End followed by the down arrow key. What happens is that the cursor jumps from the first cell with data in it to the last.

In general, End followed by an arrow key ➤

# Summing up




➤

moves the spreadsheet cursor in the direction of the arrow to the last occupied cell. Exactly what "the last occupied cell" means is something that we will have to return to later, but for the moment the basic idea is clear enough.

You should begin to see how the End key fits into the task of creating more intelligent macros. It enables you to write macros that find their own data. All that you have to do is ensure that the cursor is positioned at the top left-hand corner of the block of data that you want the macro to work with.

If you want to be really sophisticated you can even relax this condition to anywhere within the data block, but this is rather more work for the macro writer.

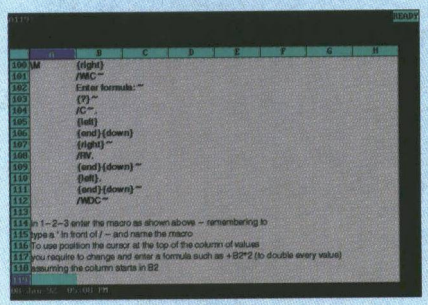
To make absolutely sure that you understand this idea of range finding within macros, let's try an example...

## A practical macro

THE following example is a macro that uses both the ideas introduced here. It tackles a problem that occurs surprisingly often – that of performing arithmetic on values stored in a spreadsheet without adding more rows or columns to it.

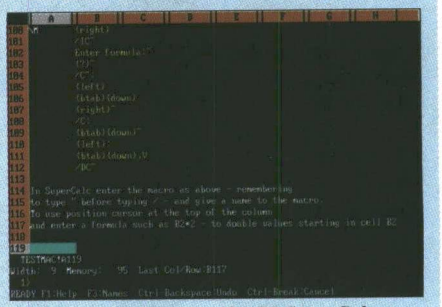
For example, you might want to apply a price increase – or a reduction – to every value in a price list and have it replace the original.

Two versions of the macro are given – for Lotus 1-2-3 and for SuperCalc – in the screen shots below. The listings are annotated, but if you do not understand what is happening do it for real by issuing the commands themselves.




*The Lotus 1-2-3 version of the macro*

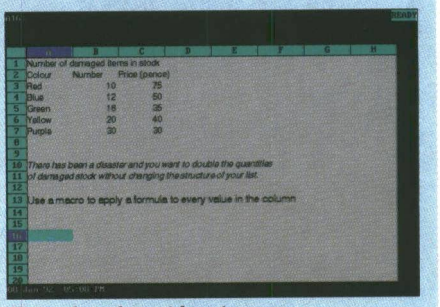
This macro works by inserting a new column and prompting you for the formula concerned. It then copies this to the remainder of the block concerned, and




*The same macro written the CA SuperCalc way*

then copies the results as values over the originals and deletes the extra column that it inserted.

To use it you give the command to run the macro with the cursor positioned at the top of the column you want to alter, for example, in cell B2 in the screen shown below:




*Using the value arithmetic macro*

## Autosum in action

MANY of the latest Windows-based spreadsheets shout about their ability to sum a column automatically and include an autosum feature – although only Excel can use this term as Microsoft trademarked it.

All you have to do it point to the cell where you want to the sum to appear, press the autosum button and the correct formula, complete with range, is inserted into the cell. This may be a new feature for a Windows spreadsheet, but with the help of a macro any spreadsheet can do it.

Starting with a slightly simpler version of autosum has advantages, so in my first example you have to place the cursor at the top of the column to be summed and it is assumed that the data in the column has no breaks. That is, there are no blank cells. The reason for this restriction will become apparent later.

All the macro has to do is to find the last occupied cell in the column, move down one cell and start to enter the SUM formula. This makes the first part of the macro simply:

```
Lotus           SuperCalc
{END}{DOWN}     {END}{DOWN}
{DOWN}          {DOWN}
@SUM(           SUM(
```

The next step is to point to the range to be summed, but remember this has to be done using the range finding keypresses. The cursor is currently on the last cell plus one of the column to be summed so a single {UP} instruction places it at the end of the data.

Entering a dot (in 1-2-3) or a colon (in SuperCalc) anchors that corner of the range and the final step is to use {END}{UP} to find the top of the column. A closing bracket and a Return is all that is needed to complete the macro:

```
Lotus           SuperCalc
{UP}.           {UP}:
{END}{UP}       {END}{UP}
)~              )~
```

Notice the inclusion of a dot (or colon) following the {UP} keypress. Without this the macro will not work. To try this macro out type it in a convenient area of a spreadsheet – somewhere out of the way where it will not interfere with, or be disturbed by, other data. Give it a suitable name, like \S, and run it.

If you read last month's article you will remember that you name a macro in the same way that you name a range – using /Range,Name,Create in the case of 1-2-3 and /Name,Create in the case of SuperCalc.

If you want to see exactly how the macro finds the range to be summed try it manually by pressing each key that the macro specifies in turn.

## Advanced autosum

THE autosum macro illustrates just how useful range finding macros can be. All you have to do is place the cursor at the start of the column, press Alt+S and the column is summed. However, it also demonstrates

➤




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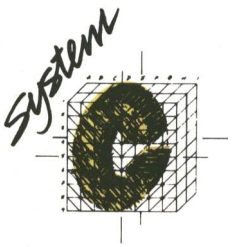
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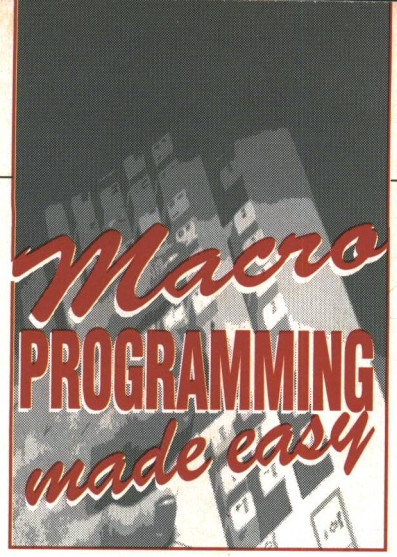
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➤

some of the problems of range finding macros.

For example, if you are using Lotus and try the macro on a column of figures that contains a few blanks, you will discover that the cursor stops on the first blank cell and inserts the SUM formula there. The reason is that Lotus interprets the End followed by an arrow key command in a rather complicated way.

What happens is that the cursor moves in the specified direction until it finds itself on a non-blank cell next to a blank one. This means that if the cursor starts on a non-blank cell it stops just before the first blank one, and if it starts on a blank cell it stops on the first non-blank one.

If you are using SuperCalc the End key works in a much simpler way. It moves the cursor to the very last occupied cell in the specified direction. This means that the autosum macro will place the sum at the end of the column even if it does have blank cells in it.

If you want to move the cursor in a way similar to the Lotus 1-2-3 End key you can use the Tab key instead. SuperCalc's Tab followed by an arrow key moves the cursor to the first non-blank cell in a run of non-blank cells.

If you use Shift+Tab (Big Tab) the cursor moves to the last non-blank cell in a run of non-blank cells. You could argue that 1-2-3 doesn't really supply enough range finding keys, but SuperCalc's are harder to understand.

To give you some idea of why you might need a variety of different range finding instructions consider the problem of writing a slightly more advanced autosum macro. This time you must place the cursor on the cell in which the SUM formula is to be stored and the macro has to work out the range to be summed.

In Lotus this is possible, but only if you add the extra condition that the range to be summed is an unbroken block of data with no blank cells.

With this restriction the Lotus macro is simply:

```
@SUM(
{END}{UP}.
{END}{UP}
)~
```

which is even shorter than the original. The SuperCalc version is very similar, but it autosums a column even if it contains embedded blank cells:

```
SUM(
{END}{UP}:
{END}{DOWN}
>~
```

This macro will fail, however, if the cell into which you are trying to enter the SUM function isn't blank. In this case the final {END}{DOWN} keypress moves the cursor to the cell where the SUM function is going to be stored and the result is, of course, incorrect. The best way to get a clear understanding of this is to try the macro.

To avoid the problem discussed above you have to write the macro as:

```
SUM(
{BTAB}{UP}:
{END}{UP}
)~
```

To see how this works just try it.

Perhaps now you can start to see why you need more than one type of range finding command. If you are a Lotus user and think that the SuperCalc approach is too complicated I would point out that there is no easy way to achieve the effect of this macro using Lotus. It can be done, but it involves rather more macro commands than have been introduced so far.

## User interaction

FINDING ranges in a keystroke macro is just one example of what makes macro key sequences different from what you would naturally type while working.

There are many examples where you type a fixed set of keystrokes and then a variation each time. For example, to enter a date in Lotus or SuperCalc you always type DATEVALUE(" and then the date followed by ").

If you are faced with the problem of typing in a full column of dates your mind very quickly turns to the idea of writing a macro to do away with the repetitive typing. At the moment however all you can do is to write a macro that provides the first part of the key sequence.

If you type this into a single cell and give it the name \D, every time you press ALT+D, DATEVALUE(" appears on the input line ready for you to complete the date entry.

This is very useful and it does speed up the process of entering dates, but it leaves the job only half done. It would be really nice if the macro could be suspended while the date was typed in and then restarted so that it could supply the closing ").

This is indeed possible as the macro command {?} will cause a pause until you press Return. Any other keys that you press while the macro is paused are acted on in the usual way.

The {?} command enables the date entry macro to be written as:

```
Lotus           SuperCalc
@DATEVALUE("    DATEVALUE("
{?}             {?}
"}~             ")~
```

Now when you run the macro the first part of the function, DATEVALUE(", appears on the entry line and you can type in the date. When Return is pressed the macro continues and adds the ")~ to the end of the line.

Notice that the Return generated after typing in the date is swallowed up by the {?} command, so to enter the final formula the macro needs to end with a tilde. If you would like to see the effect of leaving this out, just try it!

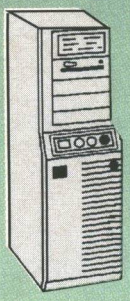
## Beyond keystrokes

USING range finding and the {?} command you can now begin to write keystroke macros that are truly useful. You can use {?} to supply any information or keypresses that change each time the macro is run. However, at the point at which keystroke macros become useful you, the macro programmer, have graduated to a level of understanding that goes beyond them.

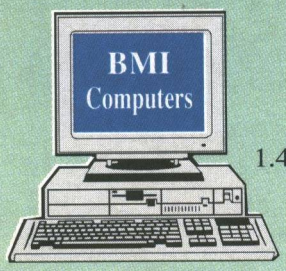
The reason is that the {?} command isn't a keystroke command – it has no equivalent on the keyboard. Instead it is a completely new spreadsheet command introduced to make macros more versatile. But with its introduction you are no longer writing macros that are slavish copies of what you might type on the keyboard and you have moved on to program macros.

The trouble is that once you have introduced one extra command to make macros easier the flood gates are open and you might as well introduce a lot.

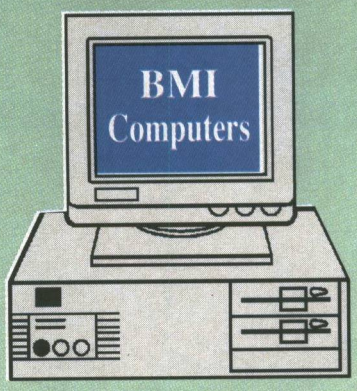
● *Next month we'll dive into the deep end with program macros.*



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DISCOVERING

# dBase

**In Part 4 of her series Les Beech shows how to change the order of your database records and use more than one file at once**

# Getting into order

SO far in this series showing how to create databases using Ashton-Tate's dBase we have seen how to use a database, enter information, produce reports, look at lists of data, and so on. In this month's article, we'll narrow down the range of records you see, change the order, and use more than one database at once.

The index is dBase's most powerful feature. It changes your file from a set of record cards in one fixed order, to a much more powerful set where you can choose to look at information in any order that suits you.

How is this possible? You first need to understand what an index is. When you enter records they are stored one after another. That is the natural order and you'll see the first record you entered at the start of the database and the last record you added at the end.

An index is a method of changing the apparent order. For instance, you might want to see the records put into alphabetical order on one of the items of information. The data could be a list of names and addresses and you might want to see these arranged in order on people's surnames.

An index is a list of the record numbers in any order you choose. When you use it and ask to see all the records, you will no longer see the first one you entered displayed first, instead you will see the record that comes first in the index.

If the index specifies alphabetical on surname, you will see those people whose surname begins with the letter A at the top of the file, and anyone whose surname begins with the letter Z at the end. Notice that you have not changed the actual order of the file – if you use it again without the index, you will see the records back in the original order.

In dBase, the index does not need to be on just one field. Take our example of using the surname. This would put all the Smiths after all the Salters, but would not put Tom Smith after Fred Smith. However, you can tell dBase that you want to use both the surname and forename to build your index, and this will ensure that Tom Smith does indeed come later in the order than Fred Smith.

The only difficulty in defining indices like this is deciding which field is most important. If you told dBase that you wanted to create an index in order of forename and surname, you would get all the Freds together rather than all the Smiths.

The other point to remember is that once you have created an index, to keep it correct you do need to use it when you are adding new records, deleting or changing existing records where the position would change. If you create an index and alter things while not using it, you will need to recreate it before you can use it again.

You can only have the records in one order, but there is no reason why you shouldn't have more than one index – seven if you are using dBase III Plus and up to 47 if you are using dBase IV.

This means, for example, that you could have one index that allowed you to look at your data in the order of people's surnames, while another allowed you to look at it in company name order.

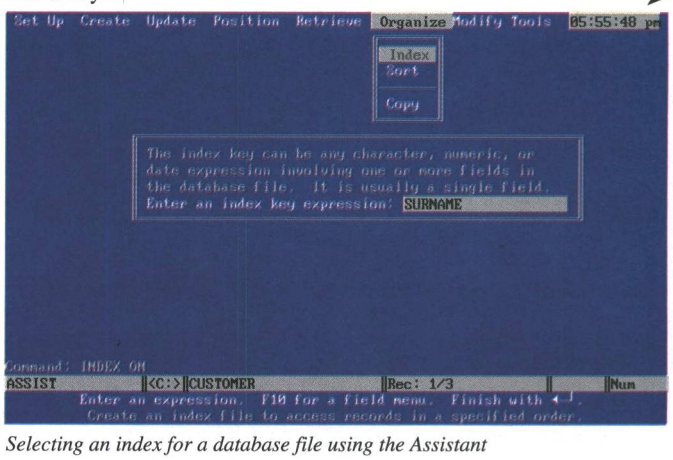
## Creating an index

HOW do you create an index in dBase? If you are working from the dot prompt, you type:

```
INDEX ON fieldname TO indexname
```

For example:

```
INDEX ON SURNAME TO surind
```




*Selecting an index for a database file using the Assistant*


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PART 1 Getting started with dBase basics

PART 2 Finding, changing and listing records onscreen

PART 3 Specifying selections and producing output

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PART 6 Putting it all together in a data entry system

➤

From the Assistant, choose Organize, then Index. You are then prompted for an index expression. Press F10 to get a list of the fields in your database, and then choose Surname. After defining the fields, press the Return key. You will then be prompted for the drive and name of the index.

In the Control Centre, choose the data file, then select *Modify structure or order*, followed by *Create new index*. Give the index a name, then on the line for *Build index expression* press Shift+F1 to get a field list. Select the surname field and press Control+End to save the index definition.

Having created your index, you need to make sure that you are using it. From the dot prompt, you should type one of these:

```
USE CUSTOMER INDEX SURIND
USE CUSTOMER SET INDEX TO SURIND
```

In either case, if you have more than one index, you can specify them with one of:

```
USE CUSTOMER INDEX SURIND,COMPIND
USE CUSTOMER SET INDEX TO
SURIND,COMPIND
```

The Assistant helps you to specify an index, as whenever you select a database you are asked whether there are any indices before leaving the menu. Using the Control Centre, you should choose the *Order records by index* option from the Organize menu. This is shown whenever you are examining records, or you can get to it from the *Modify structure/order* option when you select the file for use.

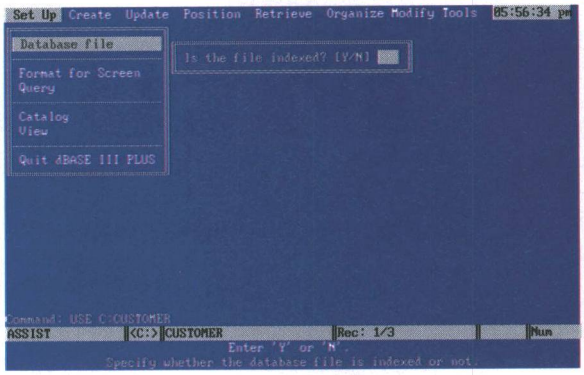
## Multiple files

WE'LL now see how to use more than one database at once. In many ways, this is when you start doing really useful things, because you can use your information more than once. This means that you can keep a list of the names and addresses of your customers, and rather than type them in every time a customer makes an order, you can simply pull the information directly into your order file.

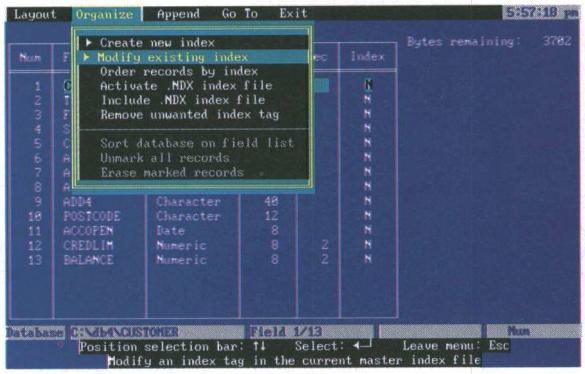
You can also handle data that has a complex structure. For example, think about how you might put together an order form. As well as using a customer name and address from elsewhere, you might like to be able to use information on the stock list to get the names of the items ordered by stock code, as well as their prices, and whether or not the items are in stock.

In an ideal world, it would be desirable to have a variable number of order lines and no wastage because of storing blank ones. This is possible in dBase, but some things are more difficult to achieve than others. To begin with, we'll look at some of the different methods of combining information from data files. In order to combine information we need to have more than one database. So far, we have been making use of a name and address database called Customer. (This was on the January cover disk and there were also instructions for creating it in Part 1 of this series.)

This is going to be used in conjunction with order and stock table databases. We want to keep the example relatively simple for the moment, so each order will only be allowed to have one item – you can order a screwdriver or a hammer, but you can't order both at once. The structure that we are going to put together is not too restrictive, as it can be used later as part of a more reasonable order processing system, but that would be too complex at this stage. The structure of the order record is:




*When setting up a database you are prompted for an index*




*Modifying an existing database index*

ORDNO character 5
CUSTNO character 5
STOCKNO character 5
CORDNO character 20
DOFORD date
NUMORD numeric integer 4
PRICE numeric 7, 2 decimal places
VAT numeric 3, 0 decimal places
DISCOUNT numeric 3, 0 decimal places
STATUS character 1
PAYMETH character 1
PAYDET character 30

This represents a fairly typical record – in fact, I have taken the structure from a real order processing system, so it has all the fields that you are likely to need. Of these, the order number *ordno* differentiates this order from all others.

The customer number *custno* is used as a link to the Customer database, while the stock code *stockno* is used as a link to the stock table database.

*Doford* holds the date of the order, *cordno* holds the customer's order number, *numord* is used to hold how many items have been ordered, *price* shows at what price the items have been ordered, *VAT* holds the VAT rate for this item, *discount* holds the percentage of discount on the order.

*Status* is used to show the stage of the order. In a typical system you might have B for back ordered due to the item being out of stock, I for sent and invoiced, O for invoiced and overdue, and C for completed. *Paymeth* holds the payment method – O for official, M for money, V for Visa, A for Access, C for cheque. *Paydet* holds the payment details – the number and expiry date of the credit card, or the cheque number.

Create this database – using the method outlined in Part 1 of this series if you're not sure – and make up a few records. Use customer codes that are the same as the ones that you have already entered.

We also need to set up our stock database. This holds information about the names, prices and numbers in stock of each item that we sell.

The required structure of this database is:

STOCKNO character 5
STOCKNAM character 40
PRICE numeric 7 digits, 2 decimals
VAT numeric 3 0 decimals
NUMSTOCK numeric 5 digits 0 decimals
REORDER numeric 5 digits 0 decimals
SUPCODE character 5

The *stockno* is the way that we link together the order line and the stock table. The field *stocknam* holds the name of the item of stock. *Price* holds the list price of the item before any discounts, and *VAT* holds the VAT percentage. *Reorder* holds the reorder level – when *numstock* falls below this, the item should be re-ordered. *Supcode* holds the supplier code for re-ordering the item. Before we come to the

commands for defining how to link files together, you need to know how to use than one database file at once. After all, so far the command USE has opened a database file. If you type the command:

```
USE CUSTOMER
```

you have access to the customer file. If you later type the command:

```
USE ORDER
```

you will then be using the order database rather than the customer name and address list. How can you overcome this and see more than one database at once? This is where the dBase work area comes in – you can access up to 10 of them, and each can hold a different database with its associated indices.

You have been making use of one work area so far – number one. Try this for yourself. Start dBase and open the file Customer. Now, change the work area. You can only do this from the dot prompt as neither the Command Centre nor the Assistant has a way of doing this. Type:

```
SELECT 2
```

Now try to browse through your database. You will notice that it has disappeared and you will get the message *No file in use*. Open the orderline database in this area by typing:

```
USE ORDER
```

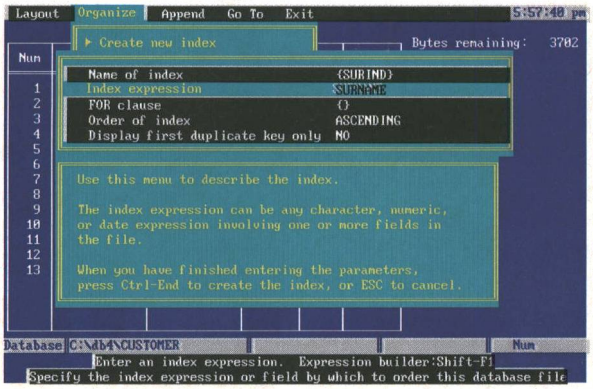
Now, we will open the stock table in area three. Type:

```
SELECT 3 USE STOCK
```

Move back to the original work area by typing SELECT 1. Now try to browse and you will see your customer name and address list back in operation. So, you can have up to 10 databases open at once in the 10 different work areas.

As well as referring to areas one to nine, they can also be called A to J. Try this out. Type SELECT B, and you will find that you are in the area where the order lines are kept. SELECT C will move you to area three where the stock table is being held. Now type SELECT A and you will be back in the first area.

The complications don't stop there. Once you have opened a database in an area, you can also refer to it by the name of the database, so SELECT ORDER moves you to area two or B, SELECT STOCK moves you to area three or C, while SELECT CUSTOMER moves you to area one or A. All three areas are fairly autonomous. For example, each has its own current record pointer, so that area A might be pointing to record seven, area B to record 15, and area C to record three.




*Creating a new index for a database file*

So far all that we have done is to open three files. The stage you should be at now is that you have entered several stock table records with sensible stock codes, and have filled in the number in stock, the re-order level, and so on. You should also have entered several order line records using customer codes that match your customer database and stock numbers that match your stock table records.

There are three ways that you might want to use more than one database at once:

- To use information from one database to change information in another. For instance, when an order has been entered, you may want to change the number in the stock field in the stock table to take account of the fact that there are fewer items to sell.
- To complete missing information in another database. For instance, when the stock code is entered in an order line, the price and VAT rate are taken from the stock table and put into the order line. Copies have to be kept in the order line of the price and VAT rate of the item, because these might change later, and the customer wouldn't be pleased if more was charged when the item was dispatched.
- To show a complete picture for any information that is not copied across for completing records. For instance, when an order is entered, the stock number is entered and the price and VAT level are copied across, but the name of the item of stock is not added. This is done to save keeping more than one copy of information that is not changed.

Likewise, the customer code is entered, but the name and address of the customer are not. To print a full invoice or receipt, the name of the item of stock has to be drawn from one database, and the name and address of the customer has to be drawn from another.

Each of these requirements needs a slightly different technique to get the results that you want. You can refer to fields in a number of databases by specifying the name of the database as well as the fieldname. For instance:

```
? customer->surname,order->stockno,
order->numord,stock->stocknam
```

would show the surname from the customer database, the stockcode and number ordered from the order database, and the name of the stock item from the stock table database.

You can refer to the fieldname and database by using the letter or number of the work area, as in:

```
customer->surname
A->surname
1->surname
```

These all refer to the same field. Personally, I find that having the name of the database is very useful, as I don't get confused about which file is open in which work area. The only problem that can occur with this scheme is that there is a limit on the maximum line length of 254 characters, so sometimes using a long database name can use up valuable space in the line.

First of all, how can you change the values in one database using the values in another? If it was a single record that you wanted to change, you could use the command REPLACE. For example:

```
REPLACE ORDER->PRICE WITH STOCK->PRICE
```

would change the price in the current record in the order database with that of the current record in the stock table database. You have to make sure that you have located the correct record in both databases.

A more general command is UPDATE. Using this, you can alter records in one database with values in another using a sensible formula for deciding which records match up.

There are a couple of rules that you ➤

should follow for Update to work. Firstly, the main database – the one that is being updated – should be indexed or sorted into order on the field that is being used to match the two files.

For example, if we are going to update the stock table database to take account of the number of items ordered in the order database, the stock table database should be indexed or sorted into order on the *stockno*. The stock table database is the main one in this update.

The second database should either be indexed or sorted into the same order, or you should tell dBase that this is not the case. If the secondary database is not in the correct order, the main database must be indexed into the correct order rather than sorted.

The simplest form of the command, used when both databases are either indexed or sorted into the same order, is:

```
UPDATE ON keyfield FROM;
secondary database REPLACE;
maindatabasefield1 WITH;
secondarydatabase->field1;
maindatabasefield2 WITH;
secondarydatabase->field2
```

For example, suppose that you want to replace all the VAT rates in the order database with new rates entered into the stock table database. Assuming that both databases have an index on *stockno*, the stocktable database being called *stockinf*, and the order database being called *ordstind*, the commands would be:

```
SELECT C
USE STOCK INDEX STOCKIND
SELECT B
USE ORDER INDEX ORDSTIND
UPDATE ON STOCKNO FROM STOCK REPLACE;
VAT WITH STOCK->VAT
```

What if the secondary database, Order, did not have an index on the stock number, and you didn't want to create one? There is a version of Update that takes care of this. If you add the word RANDOM to your command, you are allowed to work on databases that are not in the same order:

```
SELECT C
USE STOCK INDEX STOCKIND
SELECT B
USE ORDER
UPDATE ON STOCKNO FROM STOCK RANDOM
REPLACE;
VAT WITH STOCK->VAT
```

You can specify as many fields as you like in the update expression, separating each from the next with a comma. For instance, if you wanted to change the price as well as the VAT rate, you would have the lines:

```
SELECT C
USE STOCK INDEX STOCKIND
SELECT B
USE ORDER
UPDATE ON STOCKNO FROM STOCK RANDOM;
REPLACE VAT WITH STOCK->VAT, REPLACE;
PRICE WITH STOCK->PRICE
```

The comma separates one field replace clause from another, while the semi-colon is used here so that the command fits more easily within the limits of the magazine column. dBase recognises semi-colons to mean that the line is continued.

The entire update command is subject to the limit of 254 characters for a full line. Because this is one case where you are likely to want more space than you have on the line, you might well want to use the letter of the work area rather than the filename:

```
SELECT C
USE STOCK INDEX STOCKIND
SELECT B
USE ORDER
UPDATE ON STOCKNO FROM STOCK RANDOM;
REPLACE VAT WITH C->VAT, REPLACE;
PRICE WITH C->PRICE
```

Update is a strange command, in that when you first see it you think that it will be very useful and that you will use it frequently. This is not the case, partly because you are limited in the number of fields that you can get into the 254 character limit. Another problem is that generally you don't want to update absolutely every record in the main database from the secondary one.

Think about the case where you want to change the number in stock in the stock table database, reducing it by the number ordered in the order database. You can do this using Update, as the command can also be used to alter the contents of fields rather than overwrite their values altogether. For example:

```
SELECT A
USE ORDER INDEX STOCKIND
SELECT B
USE STOCK INDEX STOCKIND
UPDATE ON STOCKNO FROM STOCK REPLACE;
NUMSTOCK WITH NUMSTOCK   ORDER->NUMORD
```

Unfortunately, this takes away the number ordered from the number in stock for every record. Fine, but what happens the next time you run this command? If you use the command as it stands, you will take away the number of items ordered for every order, including those taken away the first time!

There is a way around the problem. Firstly, you have to identify what differentiates those records you want to act on – in our case, that the order date was equal to today's, or perhaps that the order number was greater than the final number of the last time we ran this program.

You must ensure the file with data from which you are updating your main file shows only relevant records. The command needed is:

```
SET FILTER TO
```

You can use this to alter the records that are in a database. For example, the commands:

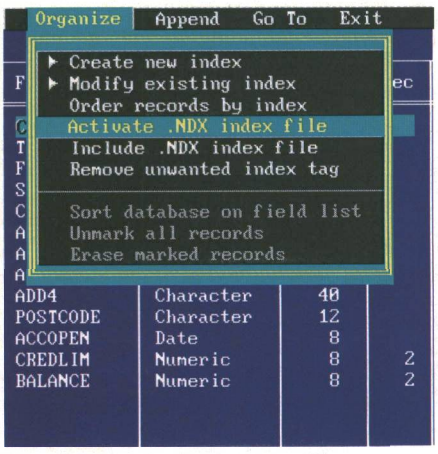
```
USE CUSTOMER
SET FILTER TO CUSTNO="ABC"
GO TOP
LIST
```

would list only customers with a code of ABC. What we would do in our example would be to filter the order database so that the only records showing were those where the date was equal to today's. You can find this date with DATE(). The commands to use are therefore:

```
SELECT A
USE ORDER INDEX STOCKIND
SET FILTER TO DOFORD=DATE()
GO TOP
SELECT B
USE STOCK INDEX STOCKIND
UPDATE ON STOCKNO FROM STOCK REPLACE;
NUMSTOCK WITH NUMSTOCK   ORDER->NUMORD
```

Using this version, you would be able to use those records that have been entered today to upgrade the stock table database so that items sold are removed from the list available for sale.

This is, of course, not an ideal solution. For one thing, people can carry on buying the last hammer that you apparently have in stock for the whole day, even though it was actually sold at five past nine in the morning.




*Activating an index for the current file*

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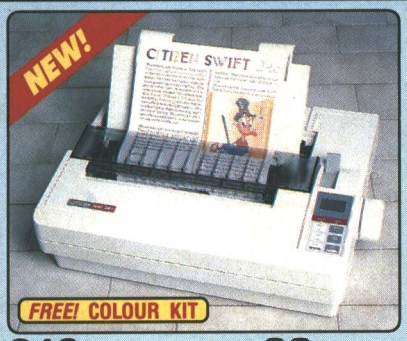
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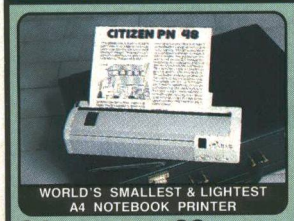
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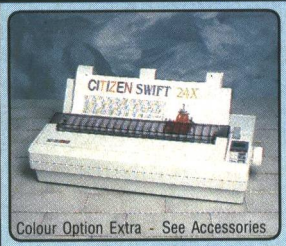
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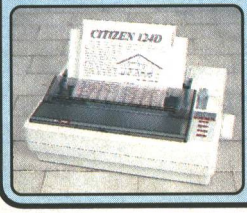
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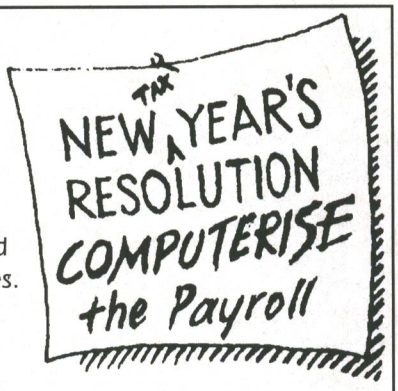
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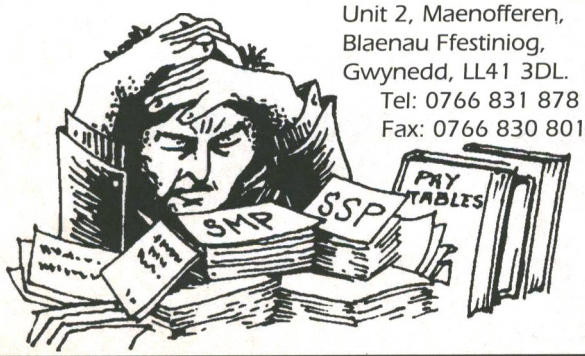



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# MOVE OVER MAC, THE PC IS BEST FOR DTP

DTP DESKTOP DIARY

**Mike James takes a brief look at PhotoFinish, compares the Mac to the PC for publishing and reveals what a bromide is**

I FIND that I spend much of DTP diary talking about graphics rather than typesetting. However, unless you are working in the layout of a dictionary or a railway timetable then you will probably agree that graphics are the biggest trouble maker. Recently I have noticed an improvement in the situation that is mainly due to the availability of good image processing packages such as Publishers Paintbrush 2.

Now there is PhotoFinish, a version of Publisher's Paintbrush 2, optimised for image capture and retouching work. It has much improved scanner support, including stitching together multiple handscans. It also has additional tools that make retouching even easier.

Best of all, if you are short on disk space, is that it now uses Windows internal fonts and so takes up much less space on disk. I'm only looking at a beta copy at the moment but it already appears to be a winner. Highly recommended.

## Which machine?

FOLLOWING my discussion last month of which PC you need for DTP applications, I have been asked to widen the net and consider if the PC really is the best machine to use for DTP. After all whenever the media think of DTP they think of Macs. I have to admit that the Mac is still marginally ahead of the PC in terms of advanced colour DTP, but that's mainly due to the momentum that has built up as a result of the Mac being the most popular DTP machine.

In all other respects the PC is the equal of the Mac when it comes to mono DTP and it shouldn't be long before the gap is closed and there is nothing to choose between the two. I say nothing to choose, but there are aspects other than how advanced the systems are.

A Mac suitable for serious DTP costs twice or three times as much as an equivalent or more powerful PC system. The reason for this price difference is nothing to do with technology, it is entirely owing to the fact that Apple have a monopoly on Mac production and without competition they can charge what they need – or like.

> *"...a Mac that's suitable for serious DTP costs twice or three times as much as an equivalent or more powerful PC."*

OK, so PCs are cheap, but they are not as easy to use. I agree with this statement – the PC isn't a completely fool proof machine: It has standards problems, file format problems, Windows installation problems, memory configuration problems, ... the list goes on. That is why the advertising slogan for the Mac goes "the machine for the rest of us" – that is, the dumbos.

Come off it... the PC is not that difficult and I for one am getting a little tired of the pro-Mac prejudice that I find from bureaux, printers and other professionals. For example, just recently the bureau that I normally use for 35mm slides from PostScript files had a fault with its machine so I had to find somewhere else for an emergency job.

I phoned a clearly Mac-oriented bureau that mentioned that it could handle PC output in its ad. "Sure" was the reply "just modem the files to us". When I got on line all I found were Mac specific file transfer protocols which made it impossible to use any of the more commonly supported ones like XModem, YModem and Kermit.

One particular Mac magazine publishes quotes from the PC world that are supposed to be so technical that the average Mac user can curl up with delight at the pleasure of knowing that the Mac would never put him to the trouble of understanding such nonsense. Such smugness at paying two or three times over the odds for a machine just because its user lacks the technical competence to boil a kettle is quite amazing.

I hear rumours the film setting bureaux are finding it hard to make ends meet in an overcrowded market. My hint and tip for this month is that they should learn a little about the PC and clean up in a growing market.

## Bromides and film

WHILE on the subject of bureaux I have been asked to explain what bromide and film are all about. If you have a laser printer you can produce 300dpi or even higher resolution masters ready for your printer to stick on a board and photograph. The resulting negative is then used to make a plate of whatever type is needed for the particular printing process they use. The only problem with this sort of paper – camera ready copy (CRC) – is that it might be a bit low resolution. At 300dpi you can see the dots in large Ss and other curvy letters.

If you want higher resolution one solution is to use a film setter, such as the Linotronic 300, to produce bromide or film. As film setters work by painting the image using a light beam on to photographic media what you get out of them is either a traditional photographic print or a negative. The print is called a bromide (because it is paper coated with an emulsion of silver bromide – and they say the computer world is obscure!) and it can be used as a high (1,200dpi) resolution CRC in place of paper.

If you want to avoid the need to photograph the bromide you can go straight to film, but this can be much more complicated. You need to know if your printer uses a positive or a negative of the page and if he works with an emulsion side down or up film. Film has two sides – the dull side coated with emulsion and the shiny celluloid side – and emulsion side up or down simply refers to the side that has to be face up to view the image the right way round. If you get it wrong the finished print will be left-right reversed.

When ordering film you have to specify positive or negative and emulsion up or down. This may sound complicated, but the real complications start if your printer wants a scaled image, that is one that isn't the same size as the finished page. For example, some printing machines use 70mm cine film with one page to a frame to automate the printing of books. I still don't know how to produce something like that using a Linotronic.

● *Next Month – fun with the elusive Ventura 4 and more grey level scanning.*

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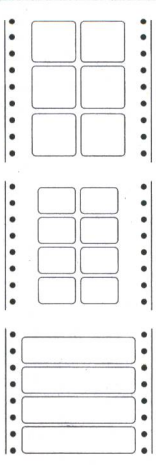
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# SOFTWARE THAT SPEAKS FOR ITSELF

**Educational software that talks! Is it just another gimmick or is it useful? John Northwood tries a package for the young learner**

THERE is now no shortage of PC educational software for young children. Most of it concentrates on the well tried and tested skill and drill routines involving numbers, spelling, colour and shape recognition. The similarity between products is such that selecting a particular package often comes down to a preference for the graphics or the number of options available for a given price.

It was refreshing therefore to find Lander Software offering a new approach to computer assisted learning for young children with the introduction of Count and Add. It's a talking software package for the PC and compatibles, aimed at the 4 to 7-year-old age group.

Lander Software, better known in the education world as Scetlander, have a well deserved reputation for good educational products.

Like most software for this range it includes all the ingredients that young children find attractive – a games approach, extensive use of good coloured graphics, animation and sounds.

Where it differs is in the use of digitised speech, which provides an element of teaching as well as reinforcement of skills through practice.




***Addition can be fun with Lander's Count and Add games***




***Count the number of lions onscreen by pressing the spacebar***

## Fun and games

THE first game presents the child with several objects – animals, fruits or other things. Large text instructs the child to count the objects by pressing the spacebar. As it does so a number appears on the screen to match the number of presses. If this exceeds the total objects displayed, the backspace key reduces the number on each depression.

When the child thinks the figure shown on the screen matches the number of objects displayed, the enter key is pressed. If the number is correct the next problem is presented. If the count was incorrect a voice instructs the pupil to "Count again". The counting procedure can then be repeated. If the second attempt is also wrong the voice says "Count with me".

Each object is then highlighted in turn as the voice counts the objects. Although not high-quality sound it was clear and quite acceptable. I did find though, that the volume varied somewhat – in a busy infant classroom some of the low volumes might be difficult to hear.

At the end of a game a summary screen is displayed. This shows the number of questions answered with and without help and the voice either says "Well done" or "Oh dear".

The other games at first appear to be very similar, but each offers a well reasoned progression to another basic numeric skill.

In game two the child is presented with a blank screen and a written instruction to find a number of objects. Each press of the spacebar then produces an object on the screen.

The next game replaces counting by spacebar presses. The child types the number from the keyboard. In each case mistakes are corrected by voice as in the earlier game.

Game four introduces simple addition. Several objects are displayed on the left-hand side of the screen and the voice asks "How many?" The child types in the answer. If this is incorrect the voice instructs "Count again." If the answer is wrong a second time the voice again counts the objects as each is highlighted. When the correct answer is given the number is displayed at the bottom of the screen.

More objects then appear on the right-hand of the screen and the voice again asks "How many?" Once the correct answer has been given the division of the screen is removed showing the two sets of objects combined. At the same time the two numbers entered appear on the screen in the form of a simple addition problem. The child has to type the answer.

If the wrong answer is entered, after two attempts the voice goes through the counting of the combined objects as before. The final game is of a similar nature, but is run against the clock.

## Two wrongs, one right

THE results screen of these last two games could do with some re-thinking. On my review copy it was possible to get the counting consistently wrong. However, since the system displays the correct answer after two wrong attempts it is possible to get the final addition right each time. The results screen ignores the counting error and declares that the user got each problem correct without help.

The program allows the teacher or parent to set many of the controlling parameters. A particularly good point for parents is that the display of the addition questions can be set to match the method used in a child's school, for instance, 2 + 3 = 5 or 2 and 3 make 5.

Count and Add brings a major new development to number-based educational software for the beginner or those with learning difficulties. Most CAL software requires reasonable reading skills. The beginner or slow learner at number work however is most likely to have limited reading skills.

Reading is not entirely eliminated, but by adding speech to the basic CAL concepts the program offers a significant advantage not found in other educational software. At £21.21 and requiring no other equipment than a 512k floppy disk-based PC with CGA and Dos 3.2 it represents excellent value.

**Product: Count and Add**
**Price: £22.21**
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EDUCATION

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See Review of Count and Add on Page 229

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| ZX2496 | 9600bps Send/Receive Fax plus 2400bps V22bis/22/21 Bell & CCITT Modem. Features include: Send & Receive high quality fax messages in background; View/print received messages; auto detect modem & fax calls; delay transmition for cheap rate calls; comprehensive log report; auto redial; dBase compatible phone base for mail merge; high resolution 200dpi mode; supports multiple printers including 9/24 pin & 150dpi/300dpi lasers; multiple file format support; MNP4/5 communications software included. Please ask for comprehensive fact sheet on this product. | £186.38 |
| ZX2496E | Enhanced version with V42/42bis & MNP2/3/4/5 hardware error correction | £206.00 |
| ZX2496P | Pocket version of the ZX2496 plus battery management system & AC adapter. | £228.94 |
| WINFAX2 | Winfax Pro Version 2 Software for use with ZX modem range. Please add ... | £45.00 |
| MXE2400 | External MX2400 modem with Status display lights, on/off switch, compatible with any computer RS232 port, MNP4-7 PC Software upto 7200bps | £109.79 |
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| TX2496 | Toshiba TX2400 with group 3 send fax & software. (Not T1000 Compatible) | £160.85 |
| PM2400 | Small V22bis/22/21 pocket modem. AC adapter/battery & MNP5 software. | £109.79 |
| VIVA24I | VIVA V22bis/22/21 PC modem plus MNP 4/5 hardware error correction. | £135.32 |
| 9600S | V32/22bis/22/23/21/42/42bis MNP 4/5 9600+ internal PC high speed modem. | £340.00 |
| 2400S+ | Omnitel V42bis/22bis/22/21/23 & MNP5 external modem. Speeds upto 9600bps | £199.00 |
| MC2400 | Amstrad V22bis/22/21/23 PC internal modem with mirror II software. | £99.00 |
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# DIGITALLY SPEAKING, IS THIS A RECORD?

**Quality digital recording on your PC? Gabriel Jacobs and Panicos Georghiades assess a comparatively low-cost add-on board designed to provide just that**

NO one now doubts that digital audio is here to stay, and not just because of its "unbreakable" quality. Sound in the digital domain is very different from the analogue variety, since the possibilities for editing and reshaping it are endless. All you need to do is apply different algorithms to transform numbers, and you can change pitch and duration, add echo, cut and paste, mix two different sources, and much more. You can even get systems which analyse numeric characteristics of clicks and scratches, and remove these nuisances from old recordings.

Not surprising, then, that big names have been looking seriously at consumer markets in this context. In 1990, for example, Philips announced the DCC (digital compact cassette), an audio cassette tape that looks much like the standard one, but with sound recorded digitally using data compression techniques.

Around the same time, Sony announced the digital mini disk. This is something like a recordable CD capable of holding an hour of high-quality sound within its 650Mb capacity.

Both these products will hit the shops this year. What's more, Sony and Philips have agreed on a joint production of DCC – thus avoiding a standards war and the problems of copyright which haunted DAT (digital audio tape), keeping it out of the shops for three years.

Furthermore, both products will carry a price tag similar to that of ordinary compact disks. Imagine what a £10 disk capable of holding 650Mb is going to do to the computer industry – goodbye to 1.4Mb floppies.

In the meantime, multimedia PCs are starting to incorporate sound-recording and playback facilities, and Windows 3.1 will include sound editing and playback accessories. The problem at present is, however, that the current multimedia sound standard is not CD quality. In fact the specifications are half those of CD, which makes them just adequate for speech, and perhaps some sound effects.

Well, for those whose ears get bothered unless they're treated to hi-fi sound, and who have wallets capable of affording large hard disks, there are alternatives – such as Digital Audio Labs' slot-in board called The CardD.

## On The CardDs

THE CardD is a 16-bit board, just over half size. It has two sets of stereo phono audio connections – a stereo input and a stereo output. These are analogue connections, so you can plug in any standard domestic audio signal – CD player, radio, musical equipment.

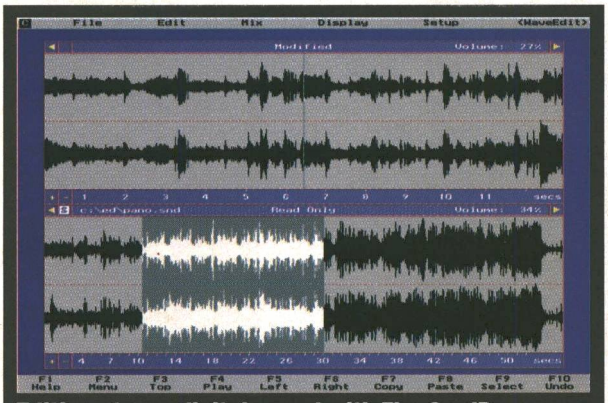
The signal is digitised (converted to numbers) by the card's analogue to digital converters, and the data is continuously stored as a file on a hard disk. At playback, the opposite process takes place. The basic system consists of just the card and a software utility that allows simple recording and playback, but to make reasonable use of the The CardD, you really need to buy the proprietary Editor program. The Editor is very easy to use. You select Record, you're prompted for a filename, and recording starts as soon as you press Enter. Pressing any key after that stops the recording and displays the recorded waveform on the screen.

The screen shows two pairs of graphs – the top pair represents the current editing buffer and the bottom pair is a read-only buffer from where you can choose sections and copy them to the top. The display has unlimited zoom options – any chosen section can be stretched to fit the screen. At the bottom of each graph there's a ruler showing time in seconds and thousands of seconds.

Pasting can take one of two forms. You can either replace a section completely, or you can mix what is already there with a new sound – in technical jargon, you can overdub. In this way you can build up a finished product just as you would make up a photographic montage.

On top of all that, a catalogue feature lets you make collections of sound files which you can play by hitting single keys on the keyboard. This facility can also be invoked from the Dos prompt.

Upgrade options include a secondary card with digital connections that plugs directly into a domestic DAT recorder. There's also a software development toolkit allowing you to access The CardD's facilities from your own programs, and a program for putting sound to video.



*Editing stereo digital sound with The CardD*

## Verdicts

NOT all is perfect. For instance, while The Editor is quite a good piece of software, it would have been even better if it had been endowed with a few more functions such as fade in fade out. Nevertheless, we were very pleased with the sound quality produced by The CardD, and particularly with the fact that all worked fine on a 40ms hard disk, thus below the 28ms upper limit usually set for this type of hardware/software combination.

But the really attractive part of this package is its price – similar systems cost over £1,000. In fact, if we weren't averse to playing around with words, we'd say that The CardD has to be a very good deal.

**Product: The CardD hard-disk recording board**
**Price: £575**
**Product: The Editor**
**Price: £150**
**Supplier: Computer Music Systems,**
**5/7 Buck St, Camden, London NW1 8NJ**
**Tel: 071-482 5224**

### HARDWARE REQUIREMENTS

**Dos 4.x or higher. Dos 3.3 will work, but its 32 Mb partition limit might be a problem. Minimum of a 286 running at 12MHz with 640k of ram. The program needs very little disk space, but data takes up about 10Mb per stereo minute. EGA and VGA monitor.**

### AUDIO SPECIFICATIONS

**Input level: +4dB (professional) or -10dB (domestic)**
**Frequency response: 20 – 20 KHz**
**Dynamic range: 92 dB**
**Resolution: 16 bit**
**Sampling rates: 32kHz (DAT) 7.7MB per stereo minute**
**44.1kHz (CD) requires 10.5Mb per stereo minute**
**48kHz (DAT) requires 11.5Mb per stereo minute**

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# PC BUYERS GUIDE

March 1992



## Buying on a budget PCs under £1,000

- What to look for
- Detailed specifications
- Advice from the experts

# PCs UNDER £1,000

PC BUYERS GUIDE

**THE range of PCs available for the potential customer on a tight budget has increased recently, with faster processors, bigger disks and high resolution graphic cards quickly dropping in price as they are superseded by ever-more advanced options. A few years ago, you would have been limited to ranges of 8088/8086 computers with floppy drives and mono or CGA screens. It is now possible to find 286 and 386 PCs with much more power and flexibility for the same price.**

Before you set off for the nearest dealer or pick up the telephone and start dialing the direct suppliers advertising in *PC Today* you first need a clear idea of why you need a new computer. A few minutes jotting down ideas on a piece of paper can save a lot of time and money. Being realistic about your computing habits can also be useful.

Are you really going to be spending most time maintaining your home accounts and writing letters, will you want to produce desktop published documents, or will you stay up late into the night playing the latest arcade adventure? The area that will take up the largest portion of computer time should dictate your emphasis when drawing up your ideal computer specification.

If money was no object, the solution would be easy, but with limited finances, you need to look carefully at each component of the system, justifying them as they go on to your shopping list. Do you really need a mouse, or Windows 3, or even the latest version of Dos? Taking these off your list could reduce the price sufficiently to increase the hard drive capacity or add extra floppy drives if you felt that these features were more desirable.

It's important to remember that the more expensive option is not necessarily the best, and that a hands-on demonstration of your potential purchase is always valuable, especially if you can get to see your intended software up and running. Sometimes your idea of what is needed can be changed radically by such experience, and if it makes you go back to the drawing board, you can at least be thankful that you did not rush in and buy without thinking.

This brings us onto the matter of where to buy your equipment: If you want demonstrations and a personal service, a specialist computer store would be the place to go. However, your equipment will probably end up more expensive than if you had bought direct from a mail order supplier or PC manufacturer advertising in *PC Today*.

Electrical chain stores in the high street can offer you limited demonstrations, but the staff won't necessarily have detailed technical knowledge.

Your preference in this area will depend on how experienced you are with computers – and therefore how confidently you can specify your machine – and how restricted your finances really are. A relatively small increase in price can gain you much goodwill and help from a local dealer, and you can usually take the equipment away with you on the day you decide to buy.

Mail order can give you much greater control over what you buy, even to the extent that a single computer could be built for you to your specification. This does take longer than buying from a shop, and one or two rogue companies have given direct buying a bad reputation, but you can be quite confident of your order as long as you keep copies of all correspondence, pay by credit card or crossed cheque, and confirm all details of the machine beforehand. A credit card order can speed things up since the company won't have to wait for your order, and usually gives you some sort of limited insurance.

A recent trend is for computers to be designed with modular, upgradeable components. Although this might be initially more expensive, it will definitely be cheaper later to replace a motherboard – to change from a 286 to a 386, for example – than to trade your current model for a new one. It's also much more efficient, since all your software can stay on hard disk, and you will know that all your extras, such as modems and sound cards, will still work.

The small business user will typically be looking for a fairly modest setup, with most computer time being spent on wordprocessing, accounting, and entering and using information on databases. A mono or mono VGA screen, hard disk and one floppy drive would be more than adequate for such use. If the software supports it, a mouse could be added.

Rather than going for a huge computer case with lots of expansion slots, a more elegant, slimline design could well fit in better with most office environments. While if you are on the move, a portable machine may be more suitable.

The games enthusiast will probably be looking for a quite different beast, with the priorities being high-quality VGA graphics, a large hard disk and the fastest processor available. The vast range of add-ons, such as sound boards, joystick cards and modems for multi-user games, require a large number of expansion slots.

Some aspects of the PC are easier to upgrade than others. Changing processors or hard disks is often more traumatic than installing extra memory or even upgrading to a newer version of Dos. Items such as extra memory can often be bought inexpensively from mail order companies and installed easily even by inexperienced users – check with the supplier first though.

Therefore these can be excluded from your initial target computer, especially if you are intending to buy from an expensive source where you will be paying relatively more for something which you might not need despite the extra help and support offered.

With PC prices being reduced every month, it will only be those most restricted financially who will be considering 8086 PC or XT machines. Buying a 286 AT model tends to be a better idea in general, both in performance and future usefulness, since upgrades for expanded and extended memory or high-density floppy drive can be added much more easily. In the end though, it is the programs you are planning to run and the applications you have in mind for your computer which will decide the hardware.

In many cases there are no short cuts and those that do exist may save you money, but not time and effort. If you have a particular software package in mind look at the software publisher's recommendations for hardware before you buy. There is no alternative to shopping around.

## Hardware options

There are several types of PC available and it's not easy deciding which one you should buy. If your processing needs are simple then an XT – an 8088/8086-based PC – with hard disk drive would be OK. You can easily run wordprocessors like WordPerfect, databases like dBase and spreadsheets like SuperCalc to provide all your business computing requirements. However, XTs are fast dying out. That's because they are slow, have limited expansion capabilities and can't run the latest graphical software like Windows.

ATs – 286-based PCs – are more powerful and only slightly more expensive than XTs. They offer faster processing, more memory and better expansion capabilities. They can also run GUIs like Windows, in a limited way. The third type of PC is the 386, but for under £1,000 you'll probably be restricted to a 386SX. This is capable of running all the very latest software at high speed and has good memory expansion capability. It is ideal as a network workstation or even a server on a small system.

**Jonathan Howell**

| Product | Price | Supplier | Processor | Processor speed | Portable | Portables - weight | Ports | Free slots | Display | Monitor | Floppy drives included | Hard disk | Standard ram | Max ram | Operating system | Warranty | Bundled software | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **8088/8086 Machines** | | | | | | | | | | | | | | | | | | |
| CI/Leo | £865 | Centreprise 0256 463754 | 8088 | 12MHz | N | - | S,P | 3 | EGA | mono | 3.5ins | 20Mb | 640k | 4Mb | opt | 12 months on-site | - | No optional extras with this compact desktop, but it copes equally well with DR Dos 6 or MSdos 5. |
| CF-170 Notebook PC | £852 | Panasonic 0344 853431 | V20 | 10MHz | Y | 2.8kg | S,P | - | CGA | mono,LCD backlit | 3.5ins 1.44Mb | 20Mb | 640k | 1.6Mb | MSdos 3.3 | 12 months on-site | GWBasic utilities | A business-like portable PC which comes with its own LIM 4.0 EMS driver. Light. |
| CF-150 Notebook PC | £574 | Panasonic 0344 853431 | V20 | 8Mhz | Y | 2.8kg | S,P | - | CGA | mono, LCD backlit | 3.5ins 720k | N | 640k | 1.6Mb | MSdos 3.3 | 12 months on-site | GWBasic utilities | Smaller brother to the CF-170. This model has no EMS driver and no hard disk. But it is extremely small and light to carry. |
| Poqet PC | £999 | Poqet 0895 430001 | 8088 | 7MHz | Y | 1lb | S,P | 2 | CGA | LCD | N | N | 640k | 640k | MSdos 3.3 | 12 months parts/labour | - | Long battery life, runs up to 100 hours on 2 AA batteries. Gives a 25 lines by 80 character display and is portable, measuring 22.3cmx10.9cmx2.5cm. |
| PC-3000 | £799 | Sharp 061-205 2333 | 80C88A | 10MHz | Y | 480g | 5 | N | CGA | LCD | N | N | 1Mb | 1Mb | MSdos 3.3 | 12 months on-site | Y | As well as serial and parallel ports there are two slots for PCMCIA 1.0 IC cards and a slot for an external floppy. This palmtop has built in rom software: Laplink and Personal Information Manager. Tiny. |
| T1000LE | £999 | Toshiba 0932 841600 | 8086 | 9.5MHz | Y | 6.5lbs | S,P | 1 | CGA | LCD | 3.5ins | 20Mb | 1Mb | 9Mb | MSdos 3.3 | 12 months | - | Though Dos comes with this portable, no other software is included in the price. With an external disk drive and a slot for a modem, its specifications compare well to those of a desktop. Backlit and supertwist display. |
| GRiD M88 | £999 | Victor 081-897 6565 | 80C88 | 4.9MHz | Y | 2.8kg | S,P | 0 | CGA | LCD backlit | N | N | 640k | 640k | MSdos 3.22 | 12 months | Y | This small portaible PC has built in MSdos 3.22 and VCom communications software. Storage is on two 256k ram cards. |
| **286 Machines** | | | | | | | | | | | | | | | | | | |
| Olystar 40S | £949 | AEG Olympia 0753 630111 | 80286 | 12MHz | N | - | 2xS P | 2 | VGA SVGA | mono 14ins | 3.5ins 1.44Mb | 40Mb | 1Mb | 5Mb | MSdos | 12 months on-site | MSWorks | A small footprint model which comes with either MSdos 3.3 or 5. There is also a PS/2 port and mouse included. |
| LCP 286-12 | £999 | Akhter 0279 443521 | 80C286 | 12MHz | Y | 13lbs | S,P | 1 | VGA 640x480 | LCD | 3.5ins 1.44Mb | 40Mb | 1Mb | 2Mb | MSdos 5 | 12 months on-site | Windows 3 | Comes complete with mouse. The 40Mb hard drive is removable giving full data security. Weighs a total of 17lbs. The free slot is half length. |
| LC286-16 | £859 | Akhter 0279 443521 | 80286 | 16MHz | N | - | 2xS P | 4 | SVGA | colour 14ins | 3.5ins 1.44Mb | 40Mb | 1Mb | 4Mb | MSdos 5 | 12 months on-site | Windows 3 | Is bundled with a mouse, this desktop model has colour as standard - SVGA with 512k as well as a 14ins colour monitor. |
| ALT28640 | £999 | Amstrad 0277 228888 | 80286 | 16MHz | Y | 13lbs | 2xS P | 1 | VGA mono | N | 3.5ins 1.44Mb | 40Mb IDE | 1Mb | 4Mb | MSdos 3.3 | dealer | N | This portable has an external socket for a monitor of your choice and a second one for a keyboard.You will also find a half length slot for expansion. |
| PC5286HD | £549 | Amstrad 0277 228888 | 80286 | 16MHz | N | - | S,P | 2 | VGA | opt | 3.5ins 1.44Mb | 40Mb IDE | 1Mb | 4Mb | MSdos 3.3 | dealer | Counterpoint | Desktop PC which comes with one of the inexpensive but efficient IDE hard disk drives. |
| 286/16 | £945 | AST 081-568 4350 | 80286 | 16MHz | N | - | 2xS P | 5 | SVGA | none | 3.5ins 1.44Mb | 40Mb | 1Mb | 16Mb | Dos OS/2 | 12 months | - | A standard 16Mhz 286, though this model does not include a monitor in the price, it does have good upgrade potential. |
| BCN3286/52 | £799 | Brother 061-330 6531 | 80286 | 16MHz | N | - | 2xS P | 2 | SVGA | mono | 3.5ins 1.44Mb | 52Mb | 2Mb | 16Mb | MSdos 5 | 12 months on-site | Windows | The colour monitor option would cost you £949. The expansion slots give you two 16-bit slots, one half length and the other full length. |
| Carry-I | £995 | Centreprise 0256 463754 | 80286 | 16MHz | N | - | 1 | 1 | SVGA | colour 10ins | 3.5ins | 40Mb | 1Mb | 4Mb | opt | 12 months on-site | - | Works just as well under DR Dos 6 or MSdos 5. A very small compact desktop PC ideal for cramped desks. |
| C286LT-12 | £899 | Commodore 0628 770088 | 80C286 | 12.5MHz | Y | 3.2kg | S,P | 1 | CGA | LCD | 3.5ins 1.44Mb | 20Mb | 1Mb | 5Mb | MSdos 4.01 | 12 months | GWBasic | With a graphics resolution of 640x480 pixels, eight grey scales with a standard supertwist nematic LCD panel with CFL backlight and a modem slot this stylish notebook is powerful and PC compatible. |
| 286-16 | £400 | Hobbykit 081-205 7485 | 80286 | 16MHz | N | - | 2xS P,games | 6 | VGA 256k | VGA paper white | 3.5ins 1.44Mb | 20Mb IDE | 1Mb | 4Mb | opt | 12 months back to base | opt | Price includes delivery by courier. Systems can be easily enhanced and changed for individual needs. This model has legal AMI bios and Landmark speed of 21MHz. |
| 286-25 | £555 | Hobbykit 081-205 7485 | 80286 | 20MHz | N | - | 2xS P,games | 5 | VGA 256k | colour 14ins | 3.5ins& 5.25ins | 20Mb IDE | 1Mb | 4Mb | opt | 12 months back to base | opt | Motherboard options range from a 286-16 to a 486DX-33. This model has a Landmark speed of 33MHz, a colour VGA monitor with a tilt and swivel base and one 8-bit and four 16-bit free slots. |

**VAT not included. Prices correct at the time of going to press.*




| Product | Price | Supplier | Processor | Processor speed | Portable | Portables - weight | Ports | Free slots | Display | Monitor | Floppy drives included | Hard disk | Standard ram | Max ram | Operating system | Warranty | Bundled software | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IBM PS/1 | £999 | IBM dealers | 80286 | 10MHz | N | - | S,P | 0 | VGA | mono | 3.5ins 1.44Mb | 30Mb | 512k | 16Mb | PCdos 4.01 | 12 months | MSWorks | Sold through dealers the specifications and pricings could change from dealer to dealer. |
| 2060D | £899 | Mitac 0952 670370 | 80286 | 16MHz | N | - | 2xS P | 4 | VGA | colour | 3.5ins 1.44Mb | 40Mb | 1Mb | 4Mb | Dos 5 | 12 months back to base | Y | This desktop is packaged with the Mitac hard disk manager which is very useful for any level of user. Limited ram though. |
| PCS 286S | £899 | Olivetti Office 0908 690790 | 80286 | 16MHz | N | - | 4 | 3 | VGA SCGA | mono | 3.5ins 1.44Mb | 40Mb | 1Mb | 16Mb | Dos | 12 months | - | The PC286S is heralded as the best selling 286 of 1991. Built to meet the needs of home and business users. Graphics support for 165 and 256 colours, you can choose the colour monitor option for £999. |
| PCD-215C | £999 | Philips 081-689 4444 | 80286 | 12.5MHz | N | - | 2xS P | 3 | SVGA | colour 14ins | 3.5ins | 40Mb | 1Mb | 8Mb | MSdos | 12 months on-site | - | MSDos 4.01 is provided which is upgradeable to 5.0. Good value 286 incorporating internal CDRom drive with six CDRom disks. Slimline desktop. |
| Hyundai Super 286E+ | £985 | Silver Reed 0923 235616 | 80286 | 12MHz | N | - | 2xS P | 5 | VGA | none | 5.25ins 1.2Mb | 100Mb | 1Mb | 4Mb | MSdos 4.01 | 12 months on-site | - | You could up the price by £285 by adding a 14ins colour monitor. With four 16-bit and one 8-bit slot, the size of the hard disk is sure to appeal to many people. |
| TriGem 286e+ | £847 | TriGem 07522 81808 | 80286 | 16MHz | N | - | 2xS P | 4 | CGA | colour | 3.5ins or 5.25ins | 42Mb | 2Mb | 16Mb | Dos 4.01 | 12 months parts/labour | - | You will receive free lifetime hotline support and a 30 day money back guarantee with this machine. |
| V286D | £999 | Victor 081-897 6565 | 80286 | 16MHz | N | - | S,P | 3 | VGA | mono | 3.5ins 1.44Mb | none | 1Mb | 5Mb | MSdos 5 | 12 months | QBasic | Comes with MSdos 5, this system does not include a hard disk. |
| Aries 286CD | £983 | Watford Electronics 0923 237774 | 80286 | 16MHz | N | - | S,P games | 5 | SVGA | SVGA mono | 3.5ins or 5.25ins | 40Mb | 1Mb | 4Mb | MSdos 3.3 | 12 months on-site | Y | Includes the Toshiba KT3301 Fast CDRom drive - internal. It also comes with bundled software. |
| Slimsport 286 Model 20 | £865 | Zenith 0628 668588 | 80286 | 16MHz | Y | 9.25lbs | S,P | 3 | VGA | LCD | 3.5ins 1.44Mb | 20Mb | 1Mb | 5Mb | Dos 5 | 12 months back to base | - | The Model 20 has a 20Mb hard disk, while the Model 40 gives you a 40Mb hard drive for £945. There are three 8-bit expansion slots via the expansion chassis. |
| **386 Machines** | | | | | | | | | | | | | | | | | | |
| CID 386/33MHz | £990 | CID 081-942 9322 | 386DX | 33MHz | N | - | 2xS P | 5 | VGA 256k | colour | 3.5ins& 5.25ins | 40Mb | 1Mb | 16Mb | MSdos 3.3/4.01 | 12 months back to base | - | Mini tower systems, additional memory costs £40/Mb. You can have a mouse for an extra £29. There is also optional on-site maintenance. VGA colour display upgradeable to 1Mb. |
| 386-DX-33 | £992 | Hobbykit 081-205 7485 | 386DX | 33MHz | N | - | 2xS P,games | 6 | SVGA 512k | colour 14ins | 3.5ins& 5.25ins | 40Mb IDE | 2Mb | 32Mb | MSdos 5 | 12 months back to base | Windows 3 | As with all Hobbykit machines, prices include delivery by courier. Landmark speed is 46MHz as well as two 8-bit, three 16-bit and one 32-bit slots.The monitor is VGA with tilt and swivel base. |
| Aries 386DX-40 | £999 | Watford Electronics 0923 237774 | 80386 | 40MHz | N | - | S,P games | 5 | SVGA | SVGA colour | 3.5ins or 5.25ins | 40Mb | 1Mb | 32Mb | MSdos 5 | 12 months on-site | Windows | Deceptively powerful 386 which comes with Super VGA non-interlaced 14, 17 or 20ins monitors. |
| **386SX Machines** | | | | | | | | | | | | | | | | | | |
| Powerflex Flyer | £669 | ALR 0635 521922 | 386SX | 25MHz | N | - | 2xS P | 3 | VGA | N | 3.5ins | 60Mb | 1Mb | 16Mb | Dos 5 | 12 months back to base | - | Upgradeable system utilising Intel's new 25MHz 386SX chip. CPU upgrades to 486SX and the on-board SVGA controller makes this system's price and performace excellent value for money. |
| LC386SX-25 | £999 | Akhter 0279 443521 | 386SX | 25MHz | N | - | 2xS P | 6 | SVGA | colour 14ins | 3.5ins 1.44Mb | 40Mb | 2Mb | 32Mb | MSdos 5 | 12 months on-site | Windows 3 | Good all rounder, with a display option SVGA and 512k as standard.The LC386SX-16 is the 16MHz model with the same specifications for £959. |
| PC4386SX | £999 | Amstrad 0277 228888 | 386SX | 20MHz | N | - | S,P | 2 | VGA | opt | 3.5ins 1.44Mb | 80Mb IDE | 4Mb | 16Mb | MSdos 3.3 | dealer | Windows 3 | This model comes with two 16-bit half length slots as well as the choice between a 10 or 14in mono or colour monitor. |
| PC386SX80 | £999 | Amstrad 0277 228888 | 386SX | 20MHz | N | - | S,P | 5 | VGA | opt | 3.5ins 1.44Mb | 80Mb IDE | 4Mb | 16Mb | MSdos 3.3 | dealer | N | The larger brother to the PC4386SX. Shows well the differences in specification for the same price. This model comes with two 16-bit and one 8-bit full length cards and one 6-bit and one 8-bit half cards and more options. |
| PC386SX40 | £749 | Amstrad 0277 228888 | 386SX | 20MHz | N | - | S,P | 5 | VGA | opt | 3.5ins 1.44Mb | 40Mb IDE | 1Mb | 16Mb | MSdos 3.3 | dealer | N | Middle of the range with lower initial memory and storage though expansion can be added later. This model model comes with two 16-bit and one 8-bit full length cards and one 16-bit and one 8-bit half cards. |
| BCN3386SX/52 | £999 | Brother 061-387 5060 | 386SX | 20MHz | N | - | 2xS P | 2 | VGA | mono | 3.5ins 1.44Mb | 52Mb | 2Mb | 32Mb | MSdos 5 | 12 months on-site | Windows | A colour monitor could be added, but this would take us out of self-imposed price bracket .£1179 for a colour monitor system. |
| SL386SX-20 | £849 | Commodore 0628 770088 | 386SX | 20MHz | N | - | 2xS P | 2 | VGA | colour 14ins | 3.5ins 1.44Mb | 52MB | 1Mb | 5Mb | Win | 12 months | Windows 3 | Top end of Commodore's range. Slimline PC with high speed processing, extensive storage and a range of configuration options to meet the demands of the professional user. |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 316S | £969 | CompuAdd 0272 254789 | 386SX | 16MHz | N | - | S,P games | 4 | MVGA | MVGA | 3.5ins& 5.25ins | 40Mb | 2Mb | 4Mb | MSdos | 12 months on-site | N | CompuAdd offer a 30-day money back guarantee on all models. You can alter the specifications on this model with a 40MbHD CVGA single drive at £999 or an 80Mb MGA single drive at £949. Lifetime hotline support. |
| Dell System 320SX | £999 | Dell 0344 860456 | 386SX | 20MHz | N | - | 2xS P | 3 | VGA | colour | 3.5ins or 5.25ins | 50Mb | 1Mb | 8Mb | - | 12 months on-site | - | MSdos 5 will cost you an optional £65 but the model comes with a tutorial and diskette. Optional 16k cache plus ability to support 1024x768 non-interlaced 16 colour graphics on the mother board. |
| Dell System 316SX | £949 | Dell 0344 860456 | 386SX | 16MHz | N | - | 2xS P | 3 | VGA | colour | 3.5ins or 5.25ins | 50Mb | 1Mb | 8Mb | - | 12 months on-site | - | MSdos 5 will cost you an optional £65 but the model comes with a tutorial and diagnostic. 256k Vram as standard upgradeable to 512k to support 1024x768 16 colour graphics. I387SX co-processor on motherboard. |
| Matrix 386-SX20 | £980 | Digital Matrix 021-722 3828 | 386SX | 20MHz | N | - | 2xS P,games | 4 | VGA SVGA | colour | 3.5ins 1.44Mb | 85Mb 16ms | 2Mb | 8Mb | MSdos 5 | 12 months | N | A mini-tower case style machine, you can up the maintenance to on-site for an extra £35. |
| PC-325XB Compact | £970 | Elonex 081-452 4444 | 386SX | 25MHz | N | - | 2xS P | 5 | SVGA 1Mb | colour | 3.5ins 1.44Mb | 40Mb | 1Mb | 16Mb | MSdos 5 | 12 months back to base | Windows 3 | Comes fully configured and ready to plug in and go. Also includes a Microsoft-compatible mouse. On-site maintenance option £25. |
| PC-325XM Slimline | £895 | Elonex 081-452 4444 | 386SX | 25MHz | N | - | 2xS P | 3 | SVGA 1Mb | colour | 3.5ins 1.44Mb | 40Mb | 1Mb | 16Mb | MSdos 5 | 12 months return to base | Windows 3 | Comes fully configured and ready to plug in and go. Also includes a Microsoft-compatible mouse. On-site maintenance option £25. |
| EL3s 1FDD | £899 | Epson 0442 61144 | 386SX | 16MHz | N | - | S,P | 3 | VGA | opt | 3.5ins 1.44Mb | none | 1.6Mb | 5.6Mb | MSdos 3.3 | 12 months back to base | N | Attractive to look at, with compact styling, small footprint and supern build quality. Provides three 16-bit expansion slots. |
| Temp C | £999 | Everex 081-205 0607 | 386SX | 20MHz | N | - | 2xS P | 3 | SVGA | colour | 3.5ins or 5.25ins | 40Mb | 1Mb | 16Mb | MSdos 5 | 12 months | - | Comes with a compact chassis and integrated enhanced VGA graphics - 800x600 with 16 colours. |
| PC-386S-20 | £990 | Haval 021-359 1807 | 386SX | 20MHz | N | - | 2xS P,games | 6 | SVGA | colour 14ins | 3.5ins or 5.25ins | 129Mb | 2Mb | 32Mb | MSdos 5 | 12 months return to base | - | Comes in desktop and mini tower casings. A three button mouse is provided in this costing too. |
| HP Vectra 386/16N Model 0 | £995 | Hewlett Packard 0344 360000 | 386SX | 16MHz | N | - | 2xS P | 3 | SVGA | none | none | none | 2Mb | 16Mb | HPdos 5 | 12 months on-site | Y | Though there are set up programs in rom supplied this is a machine cut to basics. Part of of Network-ready PCs group, the control panel has secutiry features. There is a built-in SVGA controller. |
| HiG-386SX25 | £895 | HiGrade 081-591 9040 | 386SX AMD | 25MHz | N | - | 2xS P,games | 5 | VGA 512k | mono | 3.5ins& 5.25ins | 52Mb | 2Mb | 8Mb | MSdos 5 | 12 months return to base | - | A colour monitor will cost an ectra £160 and £120 will buy you 100Mb HD or £300 a 200Mb HD. You can also have on-site maintenance for an extra £45. |
| 386-SX-25 | £935 | Hobbykit 081-205 7485 | 386SX AMD | 25MHz | N | - | 2xS P,games | 4 | SVGA 1Mb | colour 14ins | 3.5ins& 5.25ins | 40Mb IDE | 2Mb | 16Mb | MSdos 5 | 12 months back to base | Windows 3 | Price inlcudes delivery by courier - usually within five working days. Motherboard options from 286-16 to 486DX-33. Options include cache, monitors and hard disk drives. |
| 386-SX-16 | £700 | Hobbykit 081-205 7485 | 386SX | 16MHz | N | - | 2xS P,games | 6 | SVGA 512k | colour 14ins | 3.5ins& 5.25ins | 40Mb IDE | 2Mb | 8Mb | MSdos 5 | 12 months back to base | opt | Giving reported landspeeds of 21MHz, this model has two floppy drives, two 8-bit and four 16-bit slots and a 14ins colour monitor with a tilt and swivel base. |
| 386-20S | £995 | Locland 03552 28808 | 386SX | 20MHz | N | - | 2xS P | 6 | VGA | mono | 3.5ins& 5.25ins | 42Mb | 4Mb | 32Mb | MSdos 5 | 12 months | Windows 3 QBasic | You also get a Microsoft mouse with this model. The free slots divide ibnto four 16-bit and two 8-bit ones. |
| 3060D | £999 | Mitac 0952 670370 | 386SX | 16MHz | N | - | 2xS P | 4 | VGA | colour | 3.5ins 1.44Mb | 40Mb | 1Mb | 8Mb | Dos 5 | 12 months back to base | Y | Bundled with Mitac's own hard disk manager as well as a security system which is built in free of charge. This desktop model supports 1024x768 graphics. |
| 316 | £999 | Mitac 0952 670370 | 386SX | 16MHz | N | - | 2xS P | 2 | VGA | colour | 3.5ins 1.44Mb | 40Mb | 1Mb | 8Mb | Dos 5 | 12 months back to base | Y | Bundled with Mitac's own hard disk manager. This is a slime line PC which has been Novell certified. Limited expansion options but still supports 1024x768 graphics. |
| SL386/SX | £985 | Osicom 0222 778888 | 386SX | 16MHz | N | - | 2xS P | 5 | VGA | opt | 3.5ins 1.44Mb | 40Mb | 1Mb | 8Mb | MSdos 5 | 24 months on-site | - | US design which is manufactured in South Wales with a warranty administered by Granada. There is an on-board 512k VGA controller with a 8514/A option. |
| PCD 314C | £999 | Philips 081-689 4444 | 386SX | 16MHz | N | - | 2xS P | 3 | SVGA | colour 14ins | 3.5ins | 40Mb | 1Mb | 8Mb | MSdos 5 | 12 months on-site | Geoworks Ensemble | Comes with MSdos 5 as well as Geoworks Ensemble. The graphics card is compatible with SVGA, while the monitor is VGA. There are two full length and one half length AT slots. |
| TriGem SX386M | £784 | TriGem 0753 810808 | 386SX | 16MHz | N | - | 2xS P | 5 | VGA | mono | 3.5ins | 42Mb | 2Mb | 8Mb | Dos 4.01 | 12 months parts/labour | - | 30 day money back guarantee and free lifetime use of hotline support. |
| Tulip Visionline WS | £945 | Tulip 0293 562323 | 386SX | 16MHz | N | - | 2xS P | 1 | SVGA 800x600 | mono | none | none | 1Mb | 17Mb | none | 12 months back to base | N | This ultra slimline desktop is a dedicated workstation which high performance Tulip Ethernet 16-bit controller card with UTP, BNC and AUI connectors. Includes its own security system. |
| Aries NB36X20/20 | £925 | Watford Electronics 0923 237774 | 386SX | 20MHz | Y | 12kg | S,P | - | SVGA | LCD | 3.5ins 1.44Mb | 20Mb 24ms | 1Mb | 5Mb | MSdos 5 | 12 months | LotusWorks | This powerful but portable PC comes with ports for keyboard, SVGA, external key pad and floppy disk as well one for a fax modem. Complimented by the supertwist LCD thismodel has won a host of awards. |
| Z-316/SX | £840 | Zenith 0628 668588 | 386SX | 16MHz | N | - | S, P | 5 | VGA | none | 3.5ins 1.44Mb | 40Mb | 1Mb | 9Mb | Dos 5 | 12 months | - | Inexpensive 386SX desktop, though this does not include a monitor which must be bought in addition. |
| Z-LS/20 | £815 | Zenith 0628 668588 | 386SX | 20MHz | N | - | S,P | 2 | VGA | none | none | none | 2Mb | 10Mb | none | 12 months return to base | - | This is totally basic machine, which can be used as a diskless LAN station. Highly secure way to protect LAN data integrity. |

**VAT not included. Prices correct at the time of going to press.*

# PC TODAY SUPER

## FUN SCHOOL 3

### LEARNING CAN BE FUN!



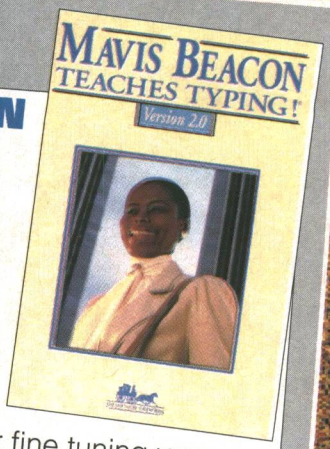

A computer is an ideal teaching tool for young children if you have the right software.

***Fun School 3*** consists of colourful and exciting programs that have been carefully designed by a team of educationalists. The computer itself monitors the child's progress. The skill level - initially set by parents - is automatically adjusted to suit the child's ability, so children can enjoy learning at their own pace.

With 3 age groups (Under 5's, 5-7 years old and 7-11 years old) ***Fun School 3*** is the ideal way to introduce youngsters to the joys of using a computer.

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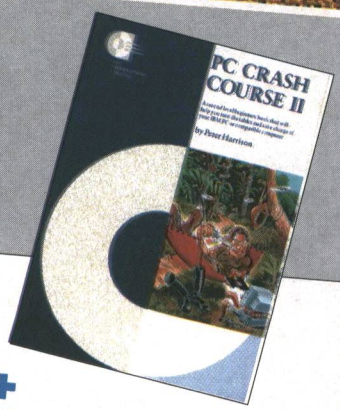
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## PC CRASH COURSE + CRASH COURSE II



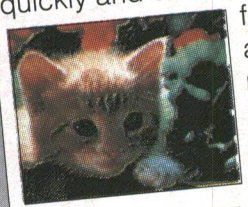

Our best selling book, The PC Crash Course And Survival Guide is now in its 3rd version and contains all you need to know to buy and use your PC XT, AT, 386 and PS/2 computers. The book comes with a disk full of simple and useful utilities and sells for £2 off the RRP.

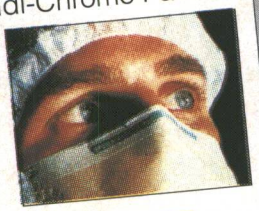
Also available is the follow up book PC Crash Course II, which takes the reader a stage further in explaining the intricacies of their computer. A must for all those who have mastered the basics.

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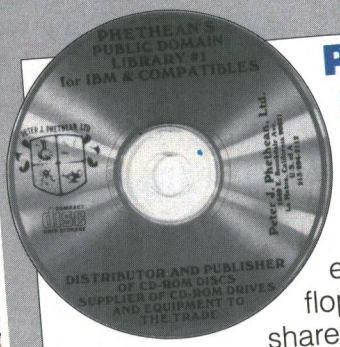




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| 5878 | Vidi-PC | £149.95 |
| 5606 | Colour Upgrade | £49.95 |
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| 5681 | Vidi-DB Image Database | £129.95 |

# BARGAIN OFFERS

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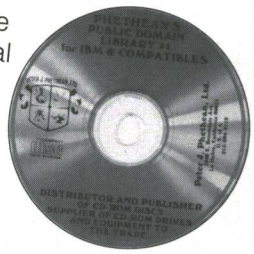

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## THE BLACK BOX

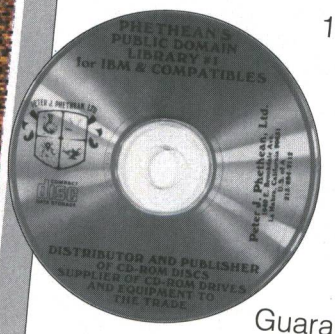
This collection of shareware and PD software, put together by the UK company Micro-Haus, is superior to all other similar products currently available. Not only does it contain a range of software second to none, substantial effort has gone into sorting it out, removing duplicated files and cataloguing the information. It comes with its own software to locate and extract files making use very straightforward. In addition to our best selling General Shareware Vol 1, Volume 2 "The Black Box" is now available. With these two CD-Roms you will never need to look for PD or Shareware software again.




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| 5662 | General Shareware Vol 1 | £65 |
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| 5746 | Vol 1 and Vol 2 | £130 |

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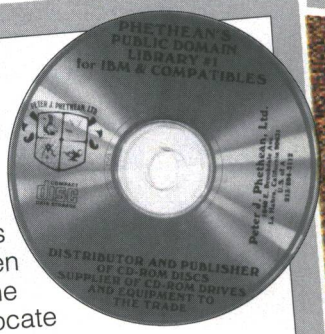



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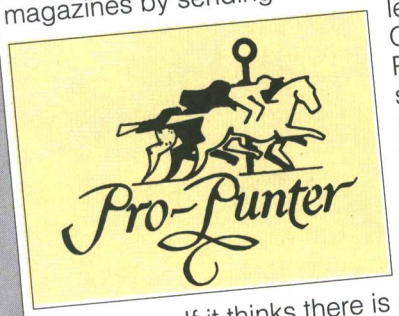
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| 5940 | 3.5 | £24.95 |

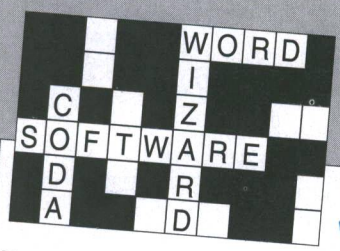



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Miss out on any of last year's PC Today Cover Discs?

All 12 disks from 1991 are available in 6-month or 12-month bundles at give-away prices.

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| 5953 | July 91-Dec 91 | 5.25 | £7.50 |
| 5954 | Jan 91-Dec 91 | 3.5 | £12.00 |
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| February 1992 + 5.25in disc | £3.25 | *5976* |

*Back issues from other months are available – phone for details*
*Add £2 Europe/Eire, £3.50 Overseas for postage per issue*

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| Beginners Guide to DOS | £9.95 | *5717* |
| How to Make Money with Computers | £9.95 | *5718* |
| How to Understand and Buy Computers | £9.95 | *5719* |
| PC Music Handbook | £8.95 | *5705* |

### Music & New Technology

Written by Gabriel Jacobs, this book is a comprehensive guide on creating music with the latest technology, from computers to digital tape recorders. Packed with simple advice, this book is essential reading for anyone who has any creative musical urge.

£12.95 *5712*

PC TODAY

## ORDER FORM

Offers subject to availability,
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*All prices include postage, packing and VAT*
**Valid to March 31, 1992**

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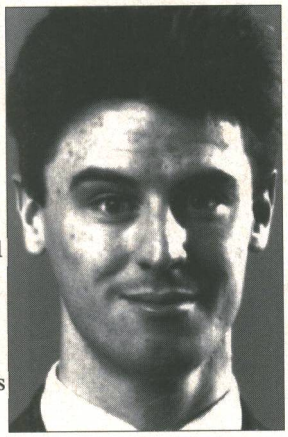
PC3

# WITS' END

**After another tiring month of launches, lunches and champagne breakfasts Martin Tobin looks at the brighter side of the PC industry**

## Baby boomer

WHILE the PC industry remains one of the fastest growing sectors of commercial life, it retains its rather youthful appeal and it is rare to find older workers in the sector. AST, one of Europe's larger PC manufacturers seem to have been really sold on the youthful approach.



*AST's new European product marketing manager Con Mallon*

Witness the accompanying picture of Con Mallon newly appointed European product marketing manager with the company. While Mr. Mallon is undoubtedly worthy of his position he does tend to make even baby-faced policemen look ancient.

## The price of multimedia

**INDUSTRY reports are always expensive, but some are more so than others. Take the latest report from Ovum which comes under the title Broadband Communications: market strategies.**

**It covers several aspects of multi-media and claims to be a complete guide to the broadband comms market and the technologies involved. The book contains interesting information on frame relay, synchronous digital transmission, MANs, broadband ISDN and FDDI. This weighty tome runs to 350 pages.**

**The cost? A mere £995.**

## Tabloids go bananas over virus

TABLOID newspapers have a well earned reputation for taking things to the extreme. Take the recent case of a burglary at Symantec's headquarters in Berkshire. The raiders were apparently disturbed when they set off an alarm. That didn't stop the ex-fleet street scribes from letting fly with a stream of hyperbole.

According to one report the "hackers are believed to have stolen vital information about a new system to combat computer viruses which can cost firms millions of pounds".

The same paper then goes on to luridly report that the "gangsters who once carried out armed robberies have also muscled in on hi-tech crime". This area is relatively new to the tabloids, but I'll wager it will not be long before we have headlines along the lines of: "Transvestite ex-vicar in computer virus shocker" or perhaps: "Freddy Starr ate my floppy"?

## Shall we tell the salesmen?

COMPANIES are ever eager to tell ***PC Today*** about their latest products. Unfortunately, they often jump the gun, and I find that products that have been announced as available are nothing of the kind until at least three months later.

Sometimes companies don't even tell their own staff. One recent example concerned a company specialising in network products. Their press release announced the immediate availability of a new product. In a spirit of investigation I rang the number on the bottom of the press release to find out the price of this new product.

"The release of what?" said the bemused manager. "How can I tell you the price when I haven't even been told about the product?".

## The joy of Danish

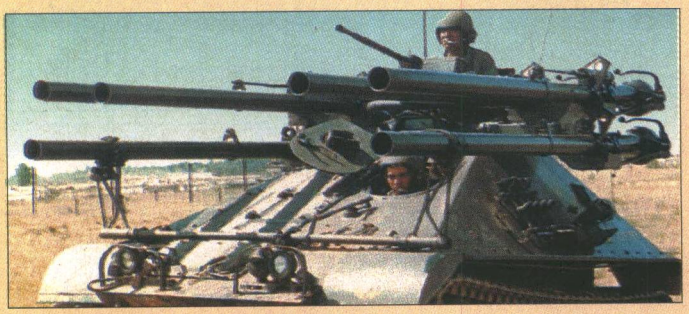
**THE high level of response to competitions and free offers in *PC Today* usually means that there is not much time to spend poring over the various entries.**

**However, there are occasions when one entry sticks out from the others. A recent competition for a joystick was a case in point. There on beautifully headed paper was an entry from the marketing department of Carlsberg.**




**Alas and alack when the draw was made this did not prove to be the winner. I couldn't help wondering what the marketing department of the Danish lager brewers could possibly want with a top of the range Zoomer joystick.**

## Mysterious losses at the MOD



*Protecting the nation – but can they protect their computers?*

NOT content with having egg on their faces for losing a portable during the gulf war, officials at the Ministry of Defence are now facing further embarrassment over House of Commons reports showing that the good old MOD hasn't really been up to the job of protecting the taxpayer's money either.

Over £1,293,000 worth of equipment was stolen or misappropriated in the last year. The main problem has been the mysterious loss of computers and office equipment worth approximately half a million. No doubt at some criminal trial of the future the following will be proffered as an excuse: "I didn't know it was stolen your honour, I thought it just fell off the back of a tank".

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Both 3.5 & 5.25 formats.

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*Actual Untouched Digitised Screen Shots*









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# Why you need QEMM386 v6

Anyone using DOS (version 3.x, 4.x or 5) with a 386, 386SX, i486 and now 486SX PC will get more from their system when they install QEMM386 v6. More memory. More flexibility. More speed. Which all adds up to *more productivity*.

This is because the 386 family of processors includes special features that enable QEMM to manage the memory, by converting Extended memory into Expanded memory. And it's *expanded* memory that software like WordPerfect and Lotus 123 r2.2 uses when they run out of conventional workspace in the area below 640k.

But applications like Windows 3 and Paradox386 require *extended* memory as well. Confused? You won't be when you let QEMM manage you memory for you.

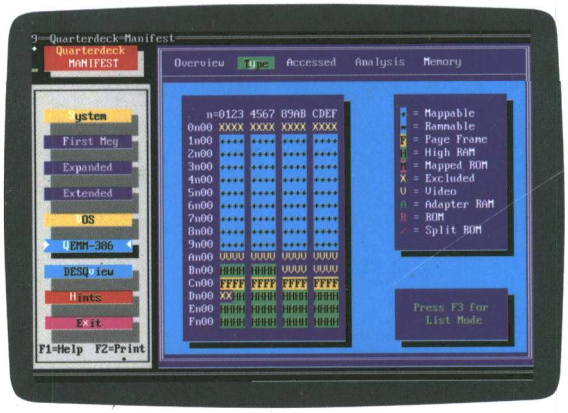
## Memory delivered on demand

QEMM sorts out your memory requirements *dynamically* - which means whatever type of memory your software requires-be it extended or expanded-QEMM will deliver the right memory, in the right quantity without you having to do anything.

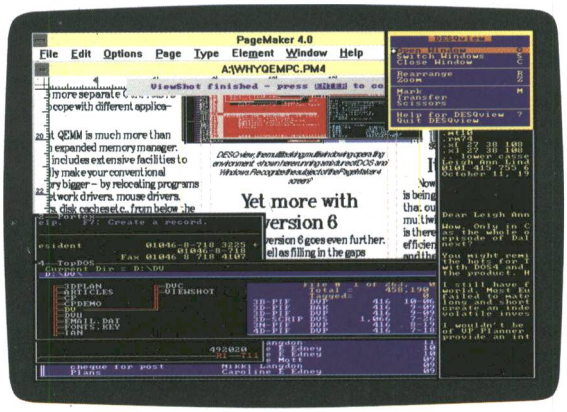
No more separate CONFIG.SYS files to cope with different applications.

But QEMM is much more than just an expanded memory manager. QEMM includes extensive facilities to actually make your conventional memory bigger - by relocating programs like network drivers, mouse drivers, buffers, disk caches etc., from the precious 640k conventional memory region, and into space that it creates above 640k in regions we call HighRAM.

These drivers can typically consume as much as 200k of your conventional memory area - leading to those dreaded "INSUFFICIENT MEMORY TO RUN THIS APPLICATION" warnings, and generally slowing things down as everything has to be squeezed through a smaller space.




The fabulous Manifest analysis and diagnostic system is provided free with QEMM




DESQview, the multitasking, multiwindowing operating environment—shown here running a mixture of DOS and Windows. Recognize the subject of the PageMaker 4 screen?

## Yet more with version 6

Our new version 6 goes even further, because as well as filling in the gaps between system ROMs in the region above 640k, QEMM6 actually reclaims space formerly occupied by system ROMs on IBM, Compaq and 100% compatibles. This means as much as 211k more of uninterrupted High RAM than ever before, and that's enough for even the largest networks.

This involves our patent-applied-for Stealth technology, that tucks away the ROMs until they are called for - a huge increase in system memory can be achieved with virtually no performance penalty.

## Easy does it

Ordinary mortals can achieve over 200k of free High RAM, just by leaving us to get on with it. The new QEMM6 requires less effort to install then ever before, thanks to our all-new installation and optimize program that installs and configures QEMM to your system, automatically.

Although there are still plenty of opportunities presented in the procedure for the old-hands to get in and fine tune, tweaking a setup for maximum thrust is no longer the exclusive province of rocket scientists and Nobel Prize winners.

## It's not over yet

Now that your memory above 640k is being managed effectively, remember that our DESQview multitasking, multiwindowing operating environment is there to make life below 640k more efficient as well.

Ask for more details, and the location of your nearest dealer.

QEMM 386 PC WEEK PRODUCT EVALUATION SCORE 8.6 · THE BEST LOTUS MAGAZINE · INFO WORLD BEST IN ITS CLASS Dec. 18, 1989 · INFO WORLD TOP 100 1989 · 1989 BYTE AWARDS OF EXCELLENCE · 1990 BYTE AWARDS OF DISTINCTION · Computer Shopper 1991 Award Winner · PC Computing MVP MOST VALUABLE PRODUCT 1990

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